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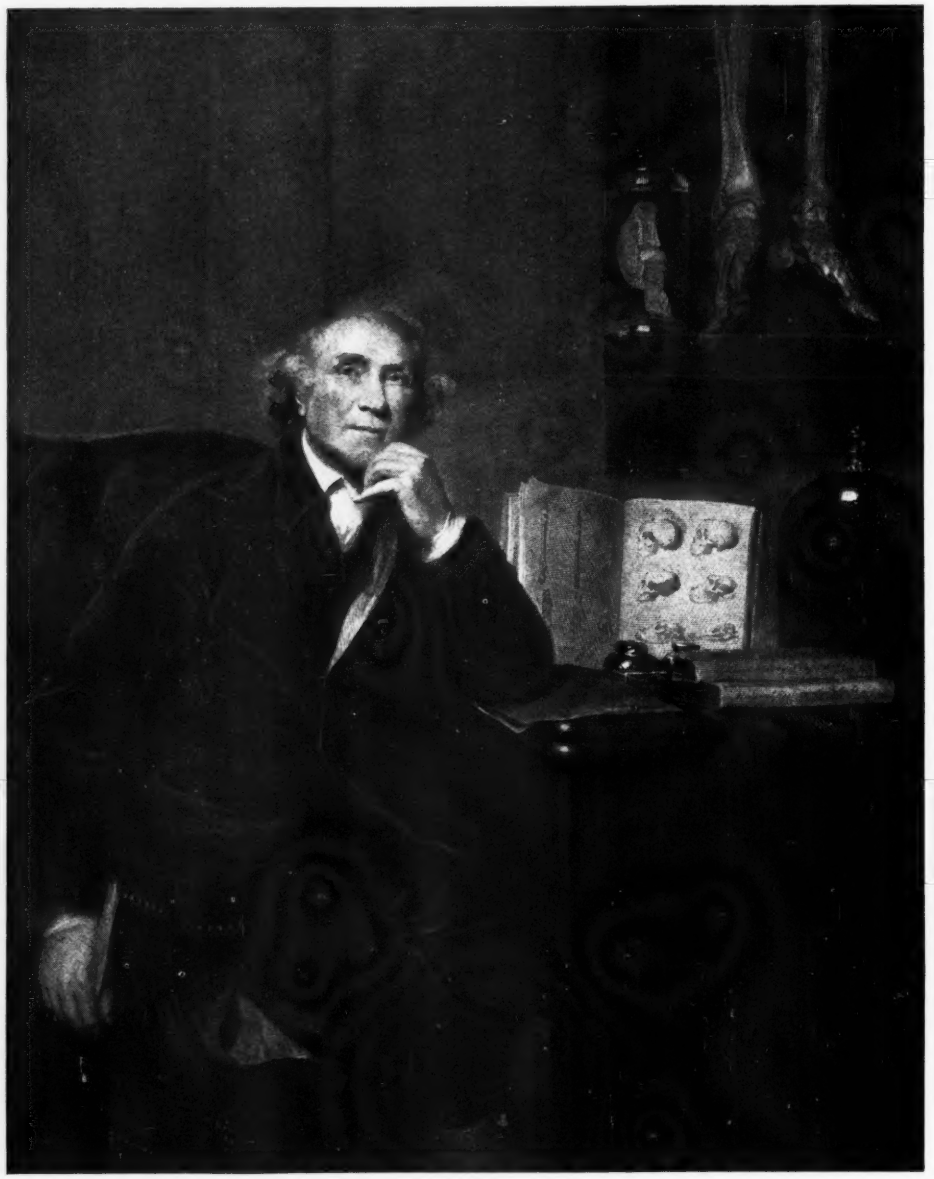

JOHN HUNTER

(1728-1793)

Principal Work:
The Natural History of the Human Teeth, London, 1771.

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ORIGINAL ARTICLES

DIAGNOSIS AND TREATMENT OF MALOCCLUSIONS CAUSED BY SUPERNUMERARY TEETH.

BY HERBERT ARMITAGE PULLEN, D. M. D., BUFFALO, N. Y.

SUPERNUMERARY teeth are numerical anomalies, or teeth which are present in the dental arches in addition to the normal number.

Location.—More often they occur singly in the incisor region, less frequently in the bicuspid region, still less frequently in the molar region, and very rarely in the cuspid region. Supernumeraries erupt in the arch line, or labially or lingually to it. Occasionally they erupt in the palate in considerable numbers, as many as eight or ten having been reported. They occur often as duplicates of the normal teeth, and from their frequent resemblance to them and from their occurrence in the regions of the incisors, cuspids, bicuspids and molars, they are often designated as supernumerary incisors, bicuspids, etc.

Variety of Form.—These anomalies appear in a number of different forms, sometimes resembling the teeth in the region in which they erupt, and again exhibiting imperfect tooth forms of single or multiple cusps, but usually all single rooted. Supernumeraries may be simply classified for ordinary diagnostic purposes according to the forms in which they occur as follows:

1. Normal teeth in size and form.
2. Cone- or peg-shaped teeth.
3. Supernumerary teeth having irregularly-shaped crowns with several cusps.
4. Supernumeraries fused to normal teeth.

In Fig. 1 is illustrated a case in which the supernumerary lateral incisor is of a normal size and form. These duplicates of the normal teeth may occur in the incisor, cuspid, bicuspid or molar region, and often present considerable difficulty in a differential diagnosis, in a consideration of the question as to which of two apparently normal teeth to extract, so perfect may be the resemblance of the supernumerary to the normal teeth.

A more common expression of these anomalies is found in the cone- or peg-shaped teeth shown in Fig. 2. This form of supernumerary occurs in and out of the arch line, and causes a great variety of malocclusions of individual teeth. Occasionally this form of tooth erupts in the position of a normal tooth, as a peg-shaped lateral, causing impaction of the normal tooth. Sometimes the normal tooth is not present in the arch, and the supernumerary has to be left as a substitute

The supernumerary tooth with several cusps is also not uncommon, erupting many times in the incisor region, as in Fig. 3, having the appearance of a misplaced molar tooth. Fusion of normal incisors with supernumerary

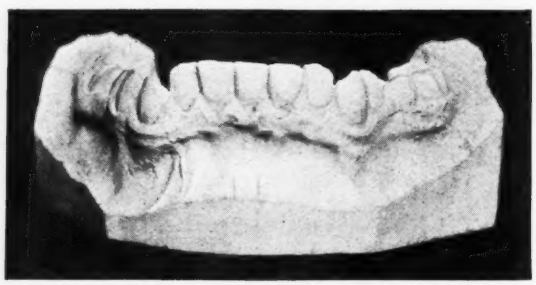


Fig. 1.—Supernumerary lateral of normal size and form.

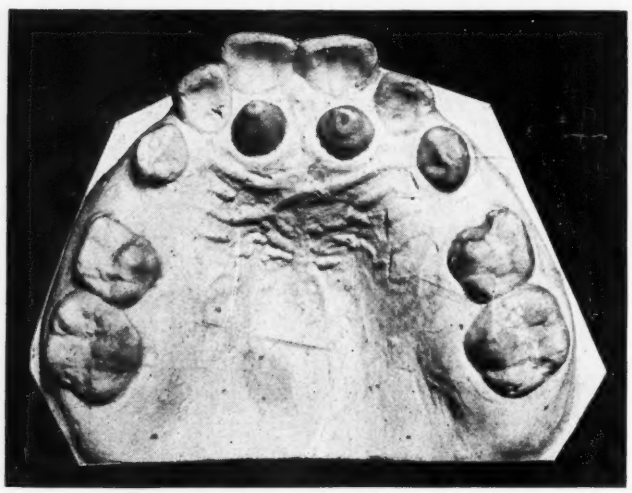


Fig. 2.—Cone-shaped supernumeraries.

teeth occasionally occurs, an example of this character being shown in Fig. 4. This is the form of supernumerary, described by Black as the dichotome, formed by the union of the supernumerary enamel germ and a normal tooth germ, forming one tooth with a common pulp and root canal.

Supernumeraries in the bicuspid region are usually duplicates in form of the normal teeth in that region, but they are not as frequently observed as are supernumeraries in the incisor and molar regions. The conical form of supernumerary is seldom found in the bicuspid region.

Fig. 5 illustrates the usual form and appearance of supernumerary bicuspids. As many as eight or ten supernumerary bicuspids of comparatively normal form in the same arch have been reported. Fig. 6 exhibits the fusion of the roots of a supernumerary tooth and a bicuspid.

Supernumerary molars may erupt as "fourth molars" distally to the third molar or as "paramolars" (Bolk) in the buccal embrasure (Fig. 7), between the second and third molars. In Fig. 8 two paramolars are observed. The "fourth molar" or "distomolar" (Bolk) is usually of diminutive size, but occasionally occurs as a full-sized molar. The supernumerary molar is not infrequently fused to a normal molar as in Fig. 9.

Deciduous supernumerary teeth are seldom found, but when present are usually of normal form and size for the region in which they occur. Fig. 10 illustrates a supernumerary incisor occurring in the deciduous dental arch. Occasionally, a deciduous supernumerary tooth will be succeeded by a supernumerary tooth of the permanent set.

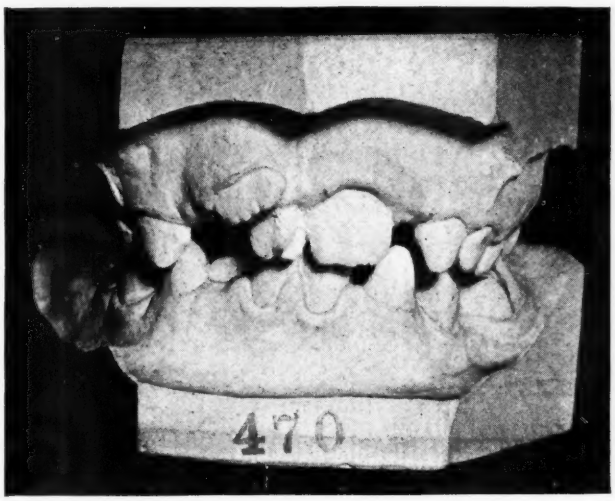


Fig. 3.—Multicusped supernumeraries.

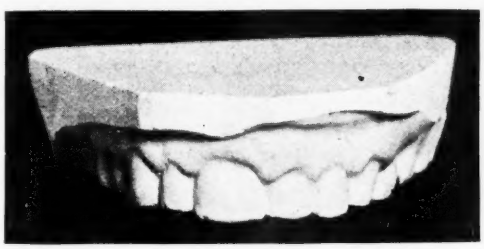


Fig. 4.

Fig. 5.

Fig. 6.

Fig. 4.—Fusion of normal central and supernumerary tooth.
Fig. 5.—Supernumerary bicuspid. (Dental Cosmos.)
Fig. 6.—Fusion of supernumerary tooth with bicuspid. (Winter.)

Necessity for Treatment of Malocclusions Caused by Supernumeraries.—In whatever form the supernumeraries occur, being a variation from the normal, they invariably cause a malocclusion, even though there is no apparent malalignment of the teeth. Usually, however, there is malalignment of the teeth, and more or less serious malocclusion occurs as a result of the presence of the supernumeraries.

Supernumerary teeth have been described and classified, and various theories of their origin propounded by dental writers to a greater or lesser degree, but the practical treatment of their resultant malocclusions from an

orthodontic standpoint has been somewhat overlooked. The generally accepted rule as to treatment of the average case has been to extract the supernumerary teeth and give Nature a chance to realign teeth which have been forced into positions of malocclusions. Further than the extraction of the supernumerary teeth, however, it is often necessary to restore to normal arch alignment teeth which have been displaced mesially or distally, labially or lingually, or rotated out of normal position, to close up spaces caused by the extra teeth, to extrude teeth in infra-occlusion, to relieve impaction of normal teeth caused by the supernumerary teeth, to contract the dental arch when it is broadened by the supernumeraries, etc.

Many of the malocclusions caused by the supernumeraries are very

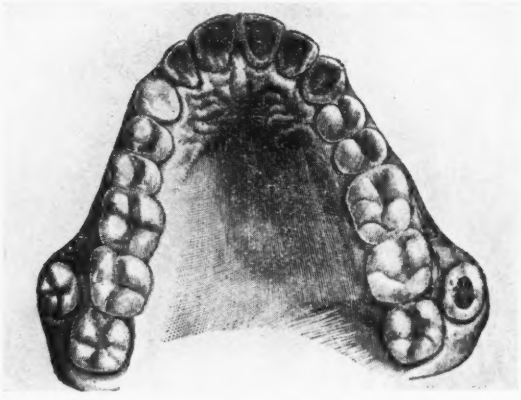


Fig. 7.—Supernumerary molars. (Talbot.)

Fig. 8.—Supernumerary molars.

Fig. 9.—Fusion of molar with supernumerary. (Kirk's Oper. Dent.)

Fig. 10.—Supernumerary deciduous lateral. (Talbot.)

simple, requiring only the extraction of the supernumerary teeth, but occasionally the malocclusions are strikingly complex in the disarrangement of the positions of the normal teeth in the dental arch, necessitating the most skillful treatment after the extraction of the supernumeraries, in the restoration of normal arch alignment and normal occlusal relations. In fact some of the resultant malocclusions may be of such a nature that the normal in occlusal relations is impossible of restoration. Again, in the malocclusions caused by supernumeraries, the crowns only of the erupting normal teeth may be deflected, but in many cases the normal teeth are displaced bodily from their normal eruptive positions, necessitating their bodily movement into position after extraction of the supernumeraries.

Diagnosis of Supernumeraries.—Supernumerary teeth are often readily

distinguished from the adjacent normal teeth by their variation in form. Frequently, however, their resemblance to the normal teeth renders their diagnosis extremely difficult. In either case the X-ray should be utilized, the skiagraphs readily determining any abnormality in form or position of the root which may give a clue to the supernumerary, or the one most advantageous to extract, or, again, if there are impacted teeth, their position and the possibility of erupting them into the arch line is, by the aid of skiagraphs, easily determined. It is quite necessary sometimes to determine whether a supernumerary molar is fused to a normal tooth and here, also, the X-ray is of diagnostic value. Sometimes, both the supernumerary tooth and a succeeding permanent tooth are impacted, and a very difficult differential diagnosis in locating the supernumerary with the X-ray has to be made.

Classification of Malocclusions Caused by Supernumeraries.—In order to have a clear picture of the various malocclusions caused by supernumeraries, the following more or less complete classification of these malocclusions will illustrate their variety and degree of complexity, as well as serve as an index to the treatment of a number of special cases which will follow somewhat along the lines of this classification:

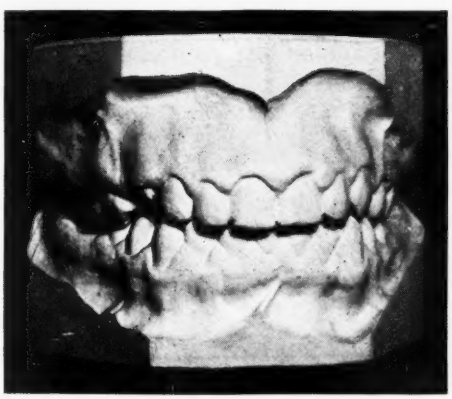


Fig. 11.—Malocclusion with perfect alignment of normal teeth and supernumeraries. (Gough.)

(a) Malocclusion with perfect alignment of normal teeth and supernumeraries.

(b) Labial or buccal displacement of normal teeth by supernumeraries.

(c) Mesial or distal displacement of normal teeth by supernumeraries.

(d) Torsal displacement of normal teeth by supernumeraries.

(e) Transposition of normal teeth through the eruption of the supernumeraries.

(f) Impaction of normal teeth by supernumeraries.

(g) Combinations of the preceding variations of tooth displacement.

(h) Existing malocclusions involving tooth displacement by supernumeraries.

(i) Broadening of the entire front of the dental arch through the presence of supernumeraries.

(j) Presence of supernumeraries in the arch and the absence of corresponding normal teeth.

(k) Fusion of supernumeraries to other teeth.

Malocclusion Without Displacement or Malalignment of the Teeth.—Cases have been reported in which the supernumerary lateral incisors, apparently normal in size and form, do not cause sufficient malalignment or malrelation of both arches in occlusion to warrant orthodontic treatment. A very unusual case of this character exhibiting one supernumerary lateral on the left side of each dental arch is shown in Fig. 11.

The laterals come into occlusal relations with each other, are in perfect arch alignment, and would be scarcely noticed as supernumeraries, so cunningly is their presence masked by the apparent harmony in arch relations. This is a very rare specimen, however, the usual case presenting with a super-

Fig. 12.—Distal and torsal displacement of upper right lateral by supernumerary.

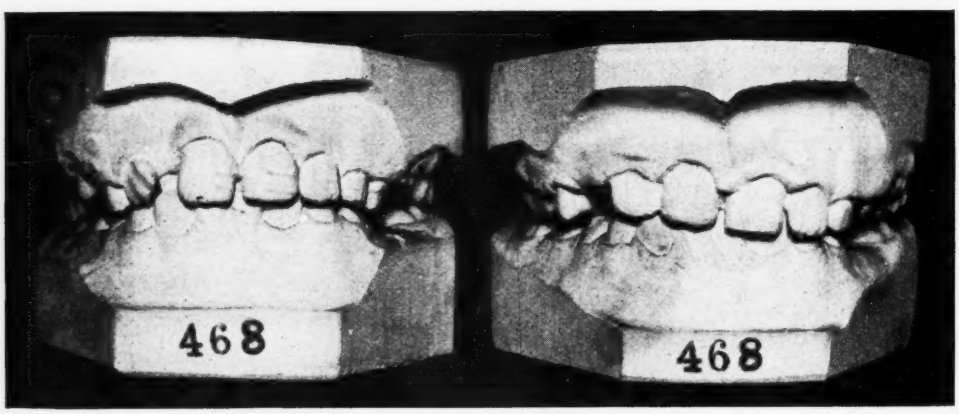


Fig. 13.—Front view of Fig. 12, before and after treatment.

numerary lateral of normal size and form in one arch and none in the opposite arch, causing an inharmony in the size of the dental arches and a malalignment or displacement of the teeth nearest to the supernumerary in the same arch.

Distal and Torsal Displacement of Normal Teeth.—The distal and torsal displacement of the upper right lateral in Fig. 12 is caused by a supernumerary lateral of normal size and form. The skiagraph of this case showed that the roots of the two upper right lateral incisors were both normal, the crown of the one in lingual occlusion, however, being slightly imperfect. For this reason it was extracted and the other lateral rotated and moved mesially

until it occupied its proper position next to the right central, as shown in Figs. 12 and 13. The appliance preferred by the writer for such cases is based upon the principle of the new Angle appliances, a portion of the .30 inch arch wire, with pin and tube arrangement as in Fig. 14 being used. A contractile loop is placed between the central and lateral on either side of the space left by the supernumerary, and the anchorage of the right central is reenforced, not only by the use of the double pins and tubes, but also by the addition of the resistance of the left central incisor, which is banded and provided with a pin and tube. The tube on the right lateral is located nearer the distal margin to provide for rotation during its movement.

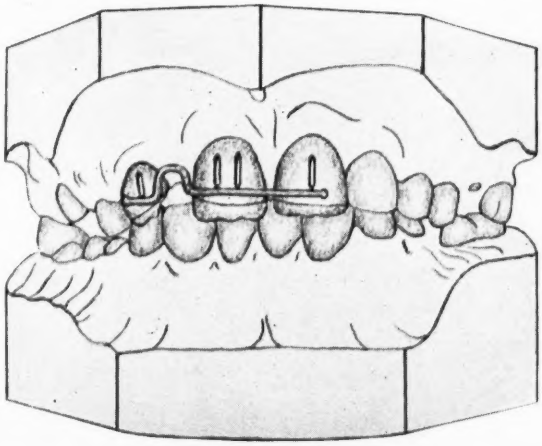
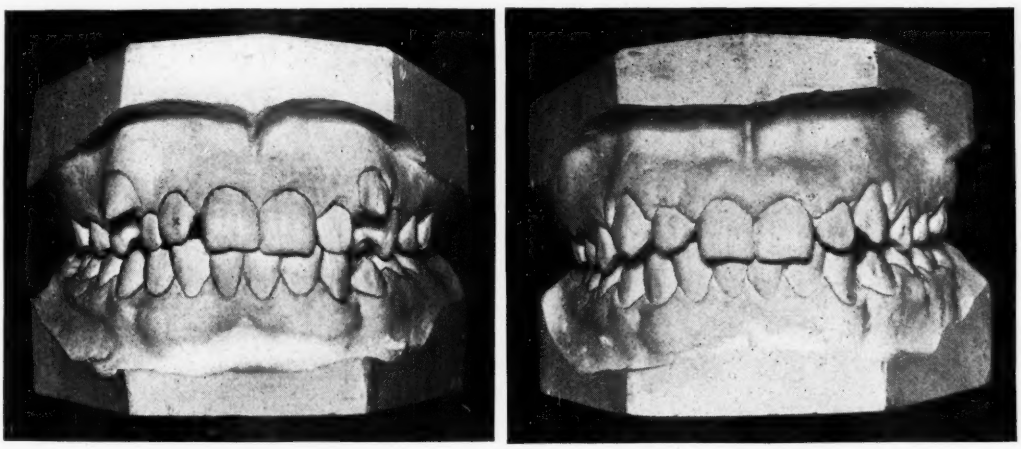


Fig. 14.—Appliance for treatment of case shown in Figs. 12 and 13.



A B

Fig. 15.—*A*. Existing malocclusion complicated by supernumerary lateral. *B*. After treatment.

It is a matter of common observation that teeth separated by supernumeraries, more often than not, require to be moved together bodily, and the pin and tube device is most admirably adapted for accomplishing this bodily movement with the greatest accuracy and least discomfort. In operation, the appliance is removed once in two or three weeks, or longer if necessary, the loop contracted very slightly, and the pins of the appliance reinserted and locked in the tubes, and the patient dismissed.

Existing Malocclusion Involving Tooth Displacement by Supernumeraries.—The supernumerary lateral incisor, marked X in the model on the left in Fig. 15, is somewhat difficult of diagnosis since it is so nearly normal in size and in form that it could have been left in position and the normal lateral, which is distally displaced, extracted. Even the skiagraph (Fig. 16) failed to show enough variation in form of root to allow of a differential diagnosis, and a decision was finally reached as to the lateral to be extracted as the one

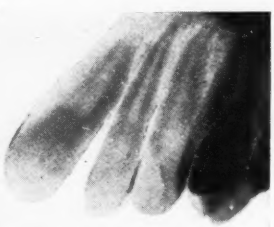


Fig. 16.—Skiagraph of case shown in Fig. 15.

next to the central, the crown of which compared least favorably in contour to the normal lateral on the other side of the arch. This selection, however, complicated treatment considerably, as it meant the bodily movement of the normal right lateral through the space of the extracted lateral, to make room for the eruption of the right cuspid.

In this case the entire sectional arch of Angle is necessary, as considerable arch expansion as well as extrusion of the upper right cuspid. Fig. 17

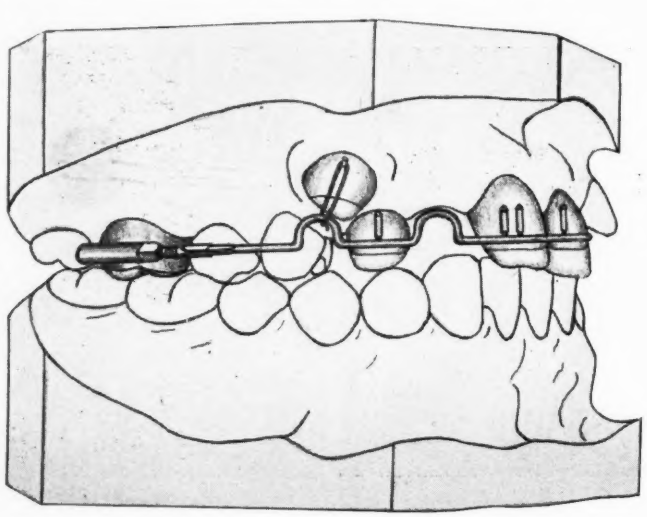


Fig. 17.—Appliance adjusted for treatment of case shown in Fig. 15.

exhibits the appliance in position after the extraction of the supernumerary lateral. Double pins and tubes may be used on the centrals, and a single pin and tube on the right lateral, which is moved bodily toward the right central by the gradual contraction of the intermediate loop in the arch wire. The double pins on the centrals serve to increase their resistance while they are used as anchorage for the bodily movement of the lateral. The upper right cuspid is ligated to the arch wire and gradually extruded into its position in

the arch while the lateral is being moved mesially. General arch expansion is controlled by the nuts in front of the anchor tubes, or by the loop in the base wire anterior to the first bicuspid.

Torsal Displacement of Normal Teeth.—One of the various torsal displacements of normal teeth caused by supernumeraries is shown in Fig. 18, the central incisors being turned labio-distally through the lingual eruption

Fig. 18.—Torsal displacement of central incisors by lingually erupting supernumeraries.

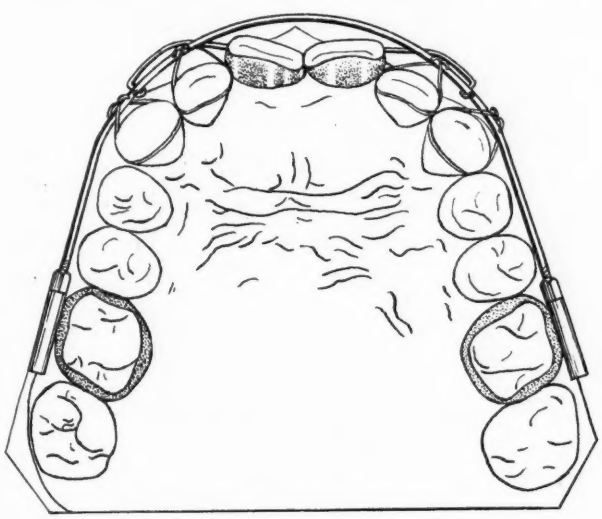


Fig. 19.—Combination of levers and expansion arch for rotating central incisors after extraction of supernumeraries shown in Fig. 18.

of two multicusped supernumeraries. The lateral incisors have moved slightly mesially, encroaching upon the space of the centrals. These cases seem simple, but often require considerable skill and attention to detail to correct. In this particular case the plain expansion arch was used for the arch alignment, the cuspids and laterals being ligated to the expansion arch, and the centrals rotated with levers engaging the expansion arch with hooks

at their distal extremities. Many of the slight torsal displacements of the anterior teeth from supernumeraries may be corrected by means of silk ligatures, arranged for rotating, by tying a slip noose around the tooth, bringing the taut ends around the angle of the tooth to be moved labially, and tying them firmly to the expansion arch. Or these teeth to be rotated may be banded and provided with lingual spurs, and rotated by wire ligatures attached to spurs and twisted on the arch wire.

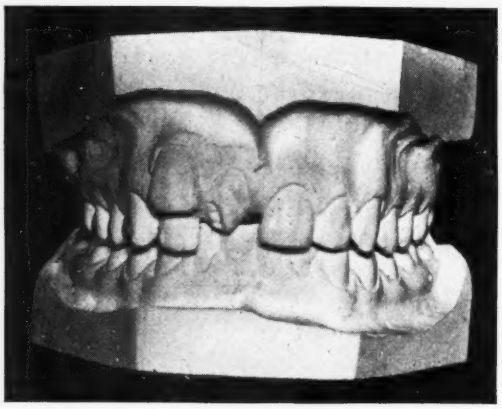


Fig. 20.—Transposition of central incisor by supernumerary.

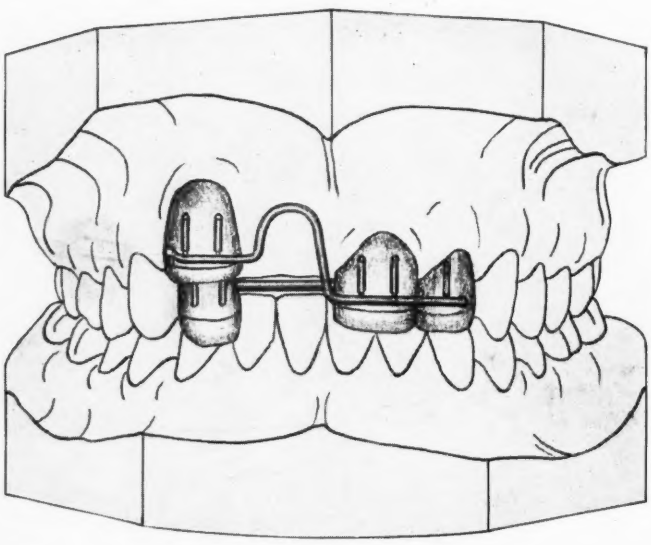


Fig. 21.—Appliance with loop adjusted ror moving right central mesially.

Transposition of Normal Teeth by Supernumeraries.—Probably the most complex displacement of the normal teeth by one supernumerary tooth is the complete transposition of a normal tooth as in the case of the upper right central incisor in Fig. 20. After the extraction of the supernumerary, it would be folly to expect the right central to move bodily of its own volition into its normal position. In the study of the dynamical possibilities of the treatment of such a case, it will be noted that the force must be so applied that the crown and root of the right central will be moved bodily toward the

left central, without the displacement of the left central, which should be used as the principal anchor tooth. Here, again, some combinations of the pin and tube attachments may be used for the application of the force for the bodily movement of the right central and for the securing of a stationary anchorage.

Fig. 21 illustrates such a combination of pin and tube attachments to the left central and lateral for anchorage, reenforced by a lingual bar soldered

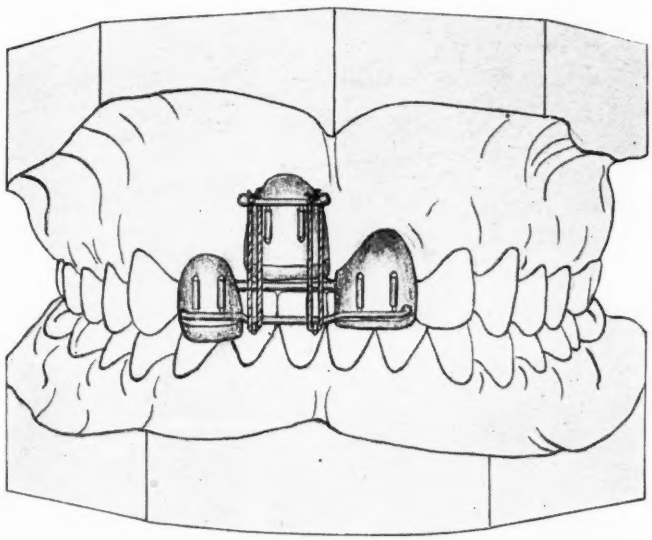


Fig. 22.—Appliance adjusted for extruding right central.

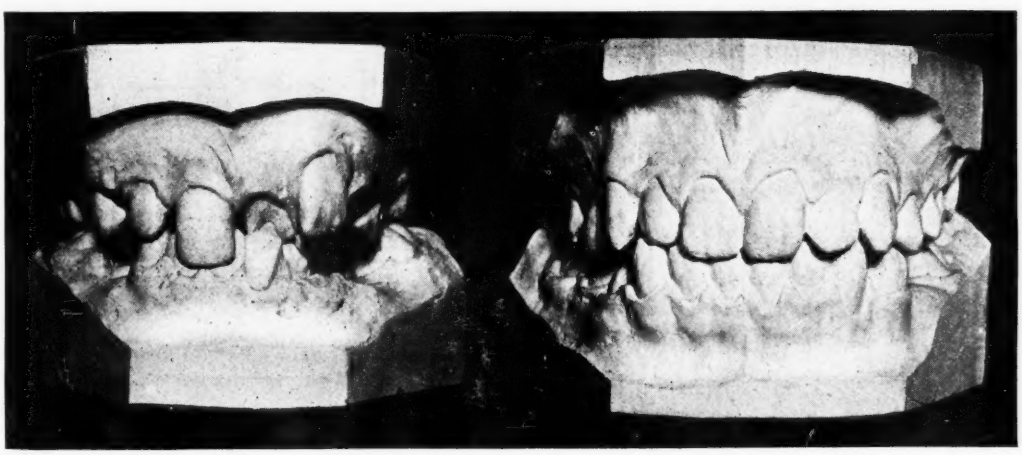


Fig. 23.—Treatment of left central incisor transposed by supernumerary.

to the lingual surfaces of the left central and right lateral bands. The operating appliance consists of a section of the .30 inch arch wire attached to the two centrals at different levels with double pins and tubes, and including a large loop, which is slightly contracted at intervals to produce bodily movements of the right central.

After the right central has been moved in this manner into its normal erupting space, the first section of .30 inch arch is discarded, and a new one substituted, attached by double pins and tubes to the right lateral as well as

to the left central as in Fig. 22, and provided with spurs for engaging silk ligatures. A short section of the .30 inch wire with pins properly attached, is fitted as shown, in the tubes on the right central, and the silk ligatures tied from the short sections to the spurs on the anchor bar below. It will be necessary to have short intervals of operating and longer intervals of rest with this arrangement in order not to move the central too rapidly.

Fig. 23 exhibits the before and after-treatment models of a case in which the left upper central incisor was moved from its transposed position in the same manner as in the preceding case after the extraction of the supernumerary intermediate between it and the right central. It was not necessary in this case, however, to perform the second stage of the operation as shown in Fig. 22, as the left central was gradually extruded to its proper position with the operating appliance shown in Fig. 21.

Impaction of the Normal Teeth By Supernumeraries.—In cases in which the supernumerary teeth precede the normal teeth in eruption as in Fig. 24,

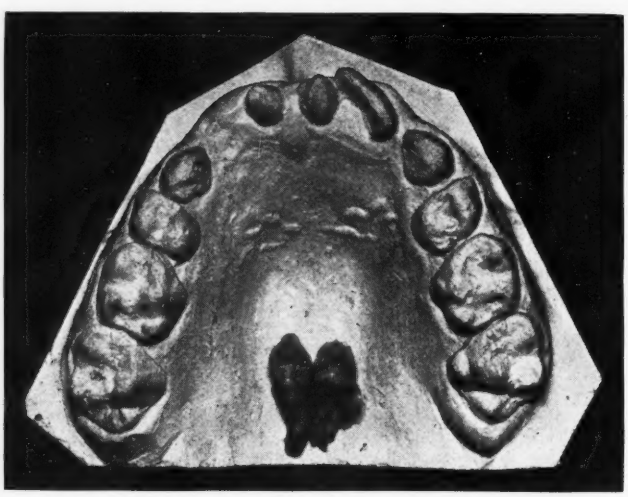


Fig. 24.—Impaction of right central incisors by supernumeraries.

one or more of the normal teeth are liable to be impacted. In this case the immediate extraction of the supernumeraries relieved the impaction of the right central incisor, which later erupted into its proper position. This case did not present for further orthodontic treatment which seemed to be indicated after relieving the impaction of the right central and the disto-torsal displacement of the left central by the extraction of the supernumeraries.

The most serious case of impaction by supernumeraries which the writer has had under observation, presented with the upper right permanent central and lateral incisors erupted, and the upper left deciduous central and lateral still *in situ* as shown in the cast on the left in Fig. 25. A skiagraph was made (Fig. 26), which exhibited an impacted multicusped supernumerary, and above it the tip of the normal central incisor. The deciduous central and lateral were extracted, and after a considerable period of waiting, the crown of the supernumerary appeared through the gums as shown in the cast on the right of Fig. 25. The supernumerary was then extracted and the new Angle appliances placed in position for general arch expansion and for increasing

the space for the eruption of the normal central. A year's time elapsed with no signs of eruption of the permanent central, when the writer decided to operate and surgically remove the bone immediately below and in front of the crown of the central which a second skiagraph showed was slowly progressing downward. The tissues were first locally anesthetized, the bone was cut away from the anterior face of the central with a bone drill, and the crown of the tooth loosened somewhat in its socket of bone. At the same sitting a hole was drilled near the distal angle of the central and a threaded

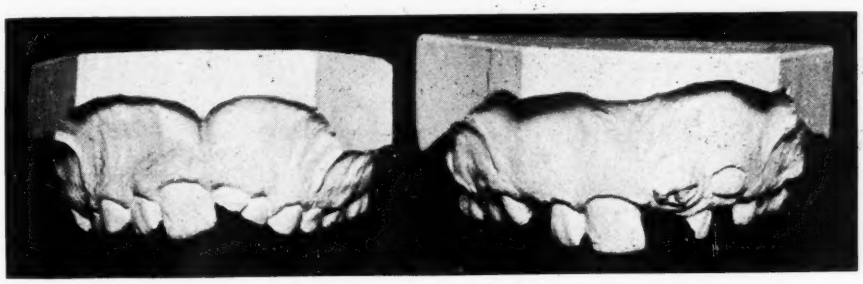


Fig. 25.—Impaction of left central by multicusped supernumerary.

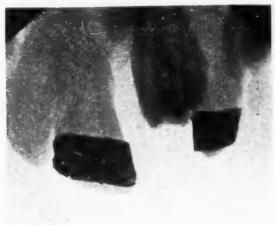
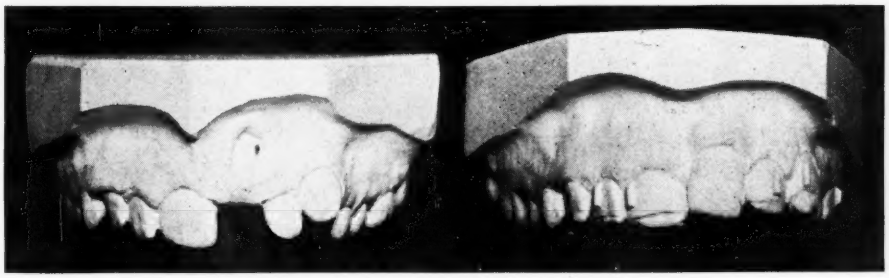


Fig. 26.—Skiagraph of supernumerary shown in Fig. 25 before its eruption.



A B

Fig. 27.—*A*. Surgical treatment of impacted central. *B*. Appearance of case at time of writing.

hook inserted and cemented in position, as shown in the cast on the left of Fig. 27

The new Angle appliance in position is shown in Fig. 28, the formerly impacted central being ligated to the central loop of the arch wire, which was used to widen the space between the right central and the left lateral. The case is very nearly completed at the present writing, the left central being nearly in position as shown in the cast on the right in Fig. 27.

The Peg-shaped Lateral.—Although it is not, strictly speaking, a supernumerary incisor, the peg-shaped lateral incisor, which is rather commonly

found, is so allied to the supernumerary lateral in size and form that its treatment may profitably be discussed. Sometimes it is mistaken for a supernumerary tooth and extracted without the assurance of an X-ray diagnosis of the absence of any succeeding tooth. In many of these cases a very esthetic reproduction of the crown of the normal lateral may be made in porcelain by the dentist, relieving the orthodontist of further responsibility.

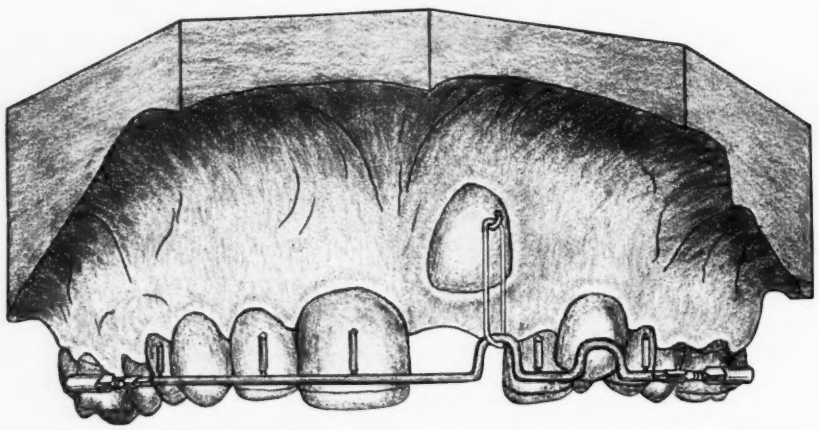


Fig. 28.—Appliance adjusted for treatment of case shown in Figs. 25 and 27.

An example of this method of ceramic restoration of the crown of a peg-shaped lateral is illustrated in Fig. 29, after a method described and illustrated in the *Dental Cosmos*, March, 1912, by Dr. W. G. Capon. This crown is made of porcelain baked to a gold shell fitted to the shaped crown of the lateral. A variation of this method, preferred by some operators, is the all-porcelain shell crown, familiarly known as the Spaulding crown, which does away with the metallic shell altogether.

Fig. 29.—Porcelain restoration of the normal lateral in case of "peg-tooth". (W. G. Capon.)

Rules for Extraction of Supernumeraries.—The simplest cases of supernumerary teeth requiring extraction only, appear often as shown in the two casts in Fig. 30. In the upper cast in this cut, the cone-shaped tooth lingual to the centrals should be immediately extracted, when the slight space between the centrals will usually close up without orthodontic treatment. In the case shown in the lower part of Fig. 30, the immediate extraction of the cone-shaped supernumerary will allow the left central to erupt into position, although this arch needs general expansion to make space for the permanent laterals.

In Fig. 31, the supernumerary has plainly been allowed to remain too long, as the left central has been labially displaced. In this case it is probable that after extraction of the supernumerary, the left central will assume its proper position in the arch line without orthodontic treatment.

Supernumerary teeth should, as a rule, be extracted as soon as they

appear through the gums, if an X-ray diagnosis shows that they are being succeeded by normal permanent teeth. Occasionally the normal tooth erupts first and the X-ray fails to perfectly show whether the succeeding tooth is of normal form, and hence it is necessary to wait until its crown has erupted before deciding on which tooth to extract. If all of the erupted teeth are normal in form for the region, the tooth farthest out of its position in the arch should be extracted.

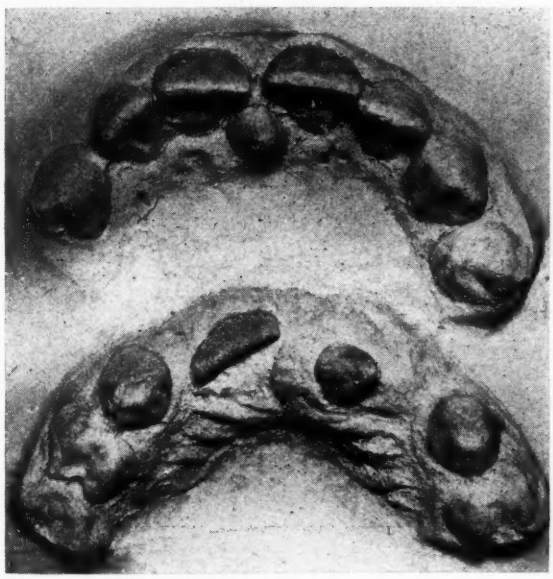


Fig. 30.—Supernumerary teeth requiring extraction only to correct malocclusion.

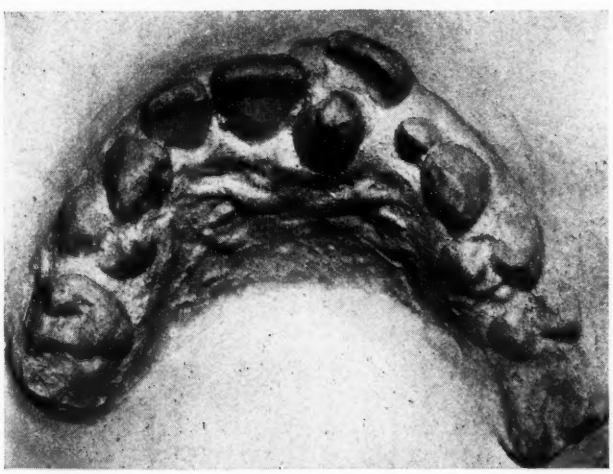


Fig. 31.—Malocclusion which will probably require extraction of supernumerary only for correction.

Fig. 32 illustrates a case where two supernumerary incisors had erupted into position, but not until the succeeding centrals had erupted in labial positions could it be accurately determined that the later erupted teeth were more nearly normal in size and form, necessitating the extraction of the earlier erupted centrals.

The case did not present for further treatment, which, no doubt, would

have been necessary to perfect the arch alignment after the extraction of the supernumeraries.

The diagnosis of, and the necessity for immediate extraction of the supernumerary tooth shown in Fig. 33 is very evident, and if it had been extracted during the eruptive period of the central incisors, there would have been sufficient space for the left central incisor to erupt into the arch line, but the extraction of the supernumerary after the space for the left central has been partially closed up will not alter the malocclusion of the remaining teeth to any degree. Orthodontic treatment is clearly indicated for slightly expanding the anterior part of the arch to secure the space for the central labially misplaced, and also to move it into position in the arch line.

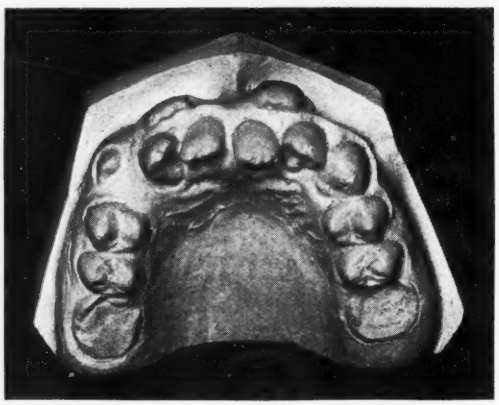


Fig. 32.—Differential diagnosis between normal centrals and supernumerary centrals necessary before hasty extraction.

Fig. 33.—Result of delaying extraction of supernumerary. The malocclusion is increased and will require treatment.

Supernumeraries in the bicuspid region are not, as a rule, difficult of diagnosis since they usually assume the normal form for the region, and erupt labially or lingually to the arch line. The treatment indicated, therefore, is usually simple extraction. Supernumerary molars, being usually of diminutive size, and erupting labially to the arch line, are also easily distinguished, and the treatment for them is likewise extraction. Black gives a well advised

caution against the extraction of what appear to be supernumerary molars without first determining whether they are fused to the normal molars (having separate pulp canals), or gemmate teeth (having united pulp chambers and canals). By prying with an instrument between the normal molar and the supernumerary, it can be determined whether the supernumerary is free in its own alveolus, and if it is not, it is better to leave it alone, as it is no doubt one of those two forms of fused or gemmate teeth, the attempted extraction of which would damage the normal tooth, so that it might also have to be extracted.

Supernumerary teeth are especially disfiguring to the features in the broadening of the dental arch through their presence, and in the number of varied simple and complex malocclusions which they cause, and the writer believes that he has demonstrated, even by the small number of treated cases shown, that orthodontic treatment is indicated in a large percentage of cases in order to perfect the arch alignment and restore normal occlusal relations.

SOME USES OF THE INCLINED PLANE.

By Allen Holman Suggett, B.S., D.D.S., San Francisco, Cal.

IN FORMER years the inclined plane was one of the mainstays in correcting a case of malocclusion. It was generally made of vulcanite and was often used to slide a central or lateral mesially.

I can testify, from personal experience, that it was not a painless process.

It was crude and cumbrous, and its use was quite restricted, for it is seldom that a case is presented with only one or two teeth in malocclusion.

The inclined plane, made of vulcanite, has therefore fallen into disuse on account of its uncertain action, but the principle is good and can, in many instances, be used to simplify some puzzling cases.

The inclined plane when made of metal and properly used is very effective for young patients, especially in moving centrals or laterals labially.

Case 1.—T. S., age sixteen months, with upper centrals closing lingually to the lower. Platinum, 36 gauge and 5/16 wide, was used to make a band that encircled both teeth. The lingual occluding edge was bent forward and stiffened with solder, so that, when it was cemented to the upper centrals, it closed mesially to the lower and in three days the teeth were carried forward, and although the bands came off on the third day, the teeth were in occlusion.

Case 2.—Miss B. B., age twenty-four months. July 22, 1912, cemented inclined plane on upper centrals. In one week the teeth were occluding properly. The inclined plane was allowed to remain on the teeth for one month. There has been no return to the old position.

Case 3.—Miss M. W., age three years. August 14, 1912, inclined plane was put on the upper right central and lateral. In a few weeks the occlusion was restored; but on October 14 a slight relapse was noticed, at

Fig. 1—Upper incisors in lingual occlusion.

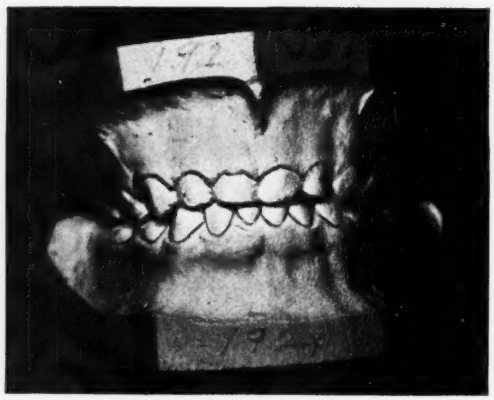


Fig. 2—Same case as Fig. 1 after teeth were moved with ligual inclined plane.

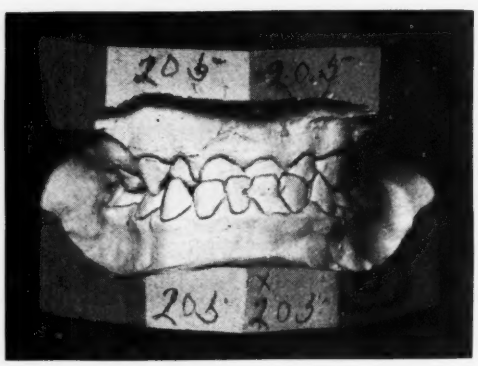


Fig 3—Upper incisors in lingual occlusion.

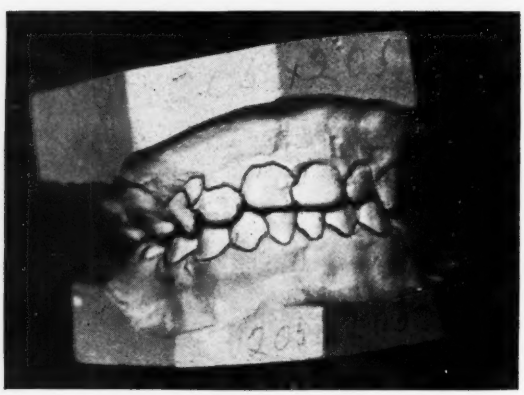


Fig. 4—Same as Fig. 3 after treatment.

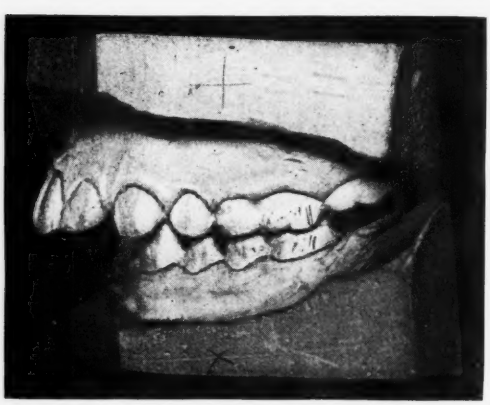


Fig. 5—Distoclusion of lower showing position of superior canine.

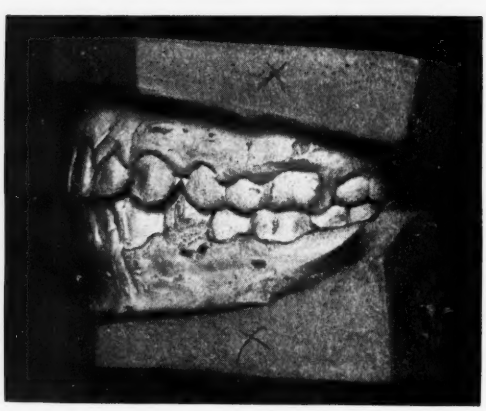


Fig. 6—Position of upper canine after treatment.

which time the plane was again adjusted and allowed to remain in position until January 31, 1913. (Figs. 1 and 2.)

Case 4.—Miss M. P. B., age four years. October 26, 1912, the inclined plane was adjusted, and was removed December 20, 1912. (Figs. 3 and 4.)

Care must be taken to make the inclined plane long and tapering so that the tooth will slide over instead of being driven into the process.

There is another use to which the inclined plane can be put. In cases

Fig. 7—Distoclusion of lower arch with the lower incisors striking the upper gum.

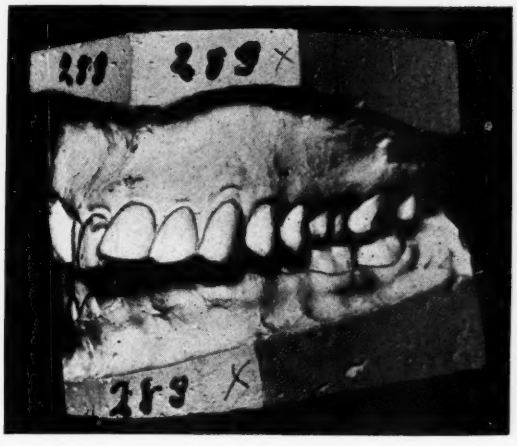


Fig. 8—Front view of Fig. 7, showing overbite of anterior teeth.

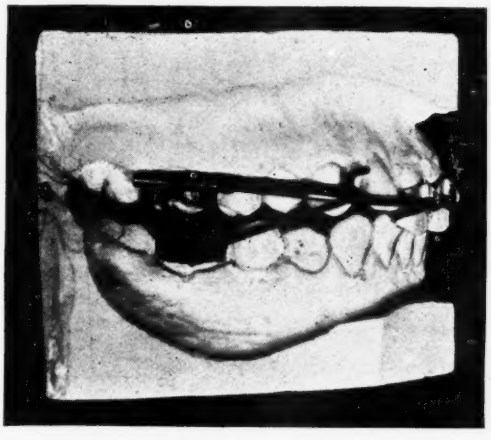


Fig. 9—Side view of Figs. 7 and 8, showing appliances.

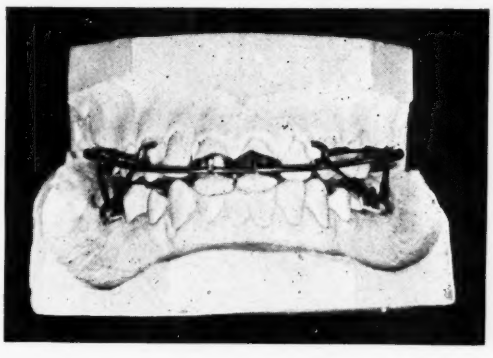


Fig. 10—Front view of Fig. 9.

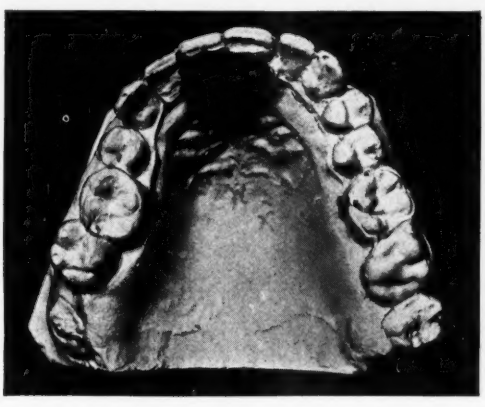


Fig. 11—Occlusal view, showing bite-plane during treatment.

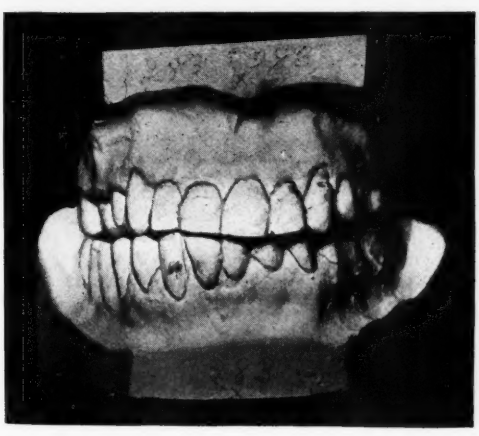


Fig. 12—Front view of Figs. 7 and 8, during treatment.

of distal occlusion after the bicuspids and molars have been moved back to the correct position, it is often difficult to get the first bicuspid perfectly seated. It hesitates to go down fully between the first and second bicuspids. (Figs. 5 and 6.)

To correct this, make a band of five percent platinum and iridium for the first lower bicuspid and solder to this a "U" of 18 gauge gold platinum wire, so it will act as an exaggerated cusp or inclined plane, and close mesially to the first upper bicuspid, forcing it into its proper position.

It is possible to maintain corrected cases of distal occlusion by having such an exaggerated cusp on both lower first bicuspids, connected by a lingual wire to prevent the incisors and cuspids from buckling.

Sometimes a finished (?) case will turn up with an upper molar drifting lingually. By making a band for the lower molar, with the exaggerated cusp on the lingual edge of the band in such a manner that it will engage the upper molar when the teeth are closed, the upper molar will slide into its proper position.

The inclined plane comes in handy in cases that are practically finished, when the patient has lost interest and is very uncertain about keeping appointments and following instructions; in such cases it is sometimes impossible to make some of the fine adjustments that are often desired without using the inclined plane.

Case 5.—P. S., age 13, distal occlusion. The case was corrected and safely locked with the exception of the right upper cuspid, which was closing buccally to the lower instead of distally. A band was made for the lower cuspid with a flange that would engage the upper cuspid and slide it distally, which it did in a few weeks, thus finishing a case that was dragging along indefinitely.

Another use of the inclined plane is in the form of the bite-plane for the upper teeth, as described by Dr. A. P. Rogers at the Denver meeting of the American Society of Orthodontists.

Since then I have used the bite-plane in a number of cases with much satisfaction. The following illustrates a case that would have been very difficult to correct without its use.

Case 6.—Miss M. D., age thirty-one, presented an extreme case of distoclusion, with the lower incisors striking the upper gums.

D-bands and alignment wires were put on both upper and lower. As soon as the upper centrals were in the correct relation to each other, the bite-plane was adjusted and rubbers extended from the tube on the lower molar band to the tube on the upper molar band, then forward to the sheath-hook on the upper alignment wire opposite the upper cuspid. This forced the lower teeth forward so the incisors closed into the bite-plane, and it also elongated the molars and corrected the infra-occlusion. Figs. 7, 8, 9, 10, 11 and 12 show the case under treatment, but not completed.

THE EFFECT OF ADENOIDS ON THE DENTAL ARCHES.*

By T. G. Duckworth, A.B., D.D.S., San Antonio, Texas.

THE WORD orthodontia is not exactly descriptive of our science—in fact it only describes a part of what is really attempted and covers only partially what is accomplished. We not only treat the malposed teeth but also correct the deformities of the jaws and the associated structures, together with the complete or partial correction of the obstructed nasal cavity. The nasal and oral cavities being so closely associated, abnormal conditions that affect one will also affect the othet, more or less. When we speak of correcting a case of malocclusion, we mean the correction of the abnormal conditions associated with the teeth, which may be the teeth, arches, jaws, nasal cavity, or muscular and atmospheric conditions.

It has been the belief of many practitioners in the past, which opinion is probably shared by many at the present time, that these abnormal conditions are hereditary, and some cannot conceive of the fact that they are congenital and acquired. It reminds me of the early philosophers who once believed that all the lower forms of life were spontaneously evolved. It was a sincere belief until some one disproved their views by some very simple yet scientific experiments, in which they found that all life came into the world as a result of pre-existing life.

In the past few years a new threshold has been opened to the eyes of the profession in regard to heredity, because to those who have had occasion to treat, observe and study malocclusions, the causes of abnormal conditions of the oral and nasal cavities are very apparent.

The known causes are well defined and produce different classes of cases having certain characteristics that are common and by which means they have been placed into three classes, each class being divided and subdivided. Certain causes—for instance, the prolonged retention of deciduous teeth, the early extraction of the deciduous teeth, tardy eruption of the permanent teeth, broken approximal contact points, habits, disuse, etc.—will produce one class of cases, while adenoids and diseased and abnormal conditions of the tonsils will produce another, and so on through the classification.

We generally always find perverted and undeveloped conditions and very seldom, in comparison, do we find an over-development. These operating forces which bring about perverted and retarded growths of the tissues, start as a rule early in life, before the bones have become fully developed, and continue to operate, unless corrected, until quite marked deformities are produced in the facial lines, marring the beauty and rendering the teeth and jaws almost useless for the purpose for which they were intended. In cases of very narrow and contracted arches, you will find them to be progressive, producing facial deformities which are more difficult to treat by the physician than most other conditions, for the origin of these deformities are associated with other specialities and factors, and when these nar-

*Read before the San Antonio Dental Society, March, 1915.

row arches are established, the removal of the adenoids and the diseased tonsils will not bring about normal breathing. To establish normal breathing, the arches must be widened, and in so doing the floor of the nasal cavity is lowered and made broader; and at the same time you make room in the arches to accommodate, in a normal manner, the protruded and retruded teeth and give more room for the tongue; thereby making nasal breathing possible.

The so-called "New School" has taught this work as a science and as a specialty since 1888, although the greatest progress has been made since 1900. The men who are doing this work are probably in a position to say more about bone growth and bone development than any other class of men, due to the fact that they have done and are doing extensive research work along this line which is published in the various journals and is supported by contributions and the National Dental Association.

In reference to bone development, you will find in a corrected case of

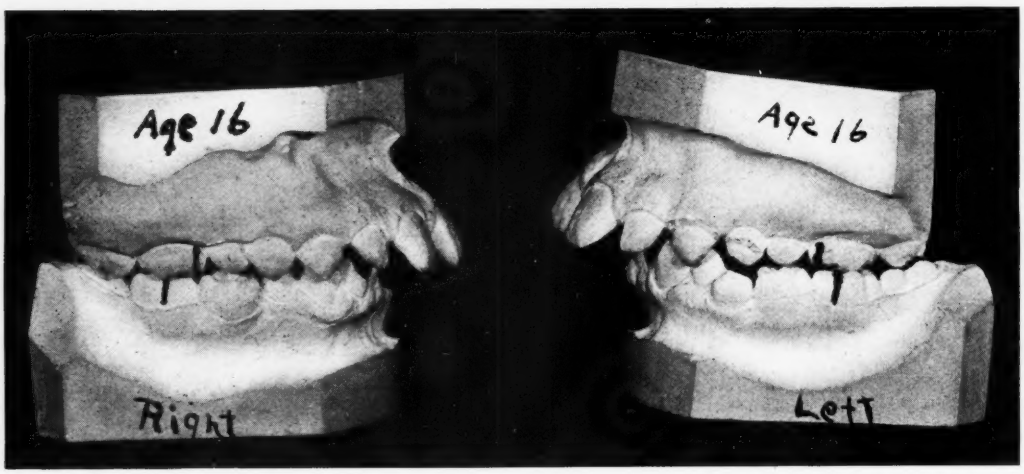


Fig. 1.—Showing abnormal relation of molars and extreme protrusion of the upper incisors.

narrow contracted arches and protruded and retruded condition of the teeth, marked improvements in facial lines, with the establishment of normal occlusion and normal breathing, which is brought about by the opening of the nasal cavity and the development of the bones to their normal size. This development is brought about by mechanical stimulation. The alveolar process is subservient to the use of the teeth and wherever the teeth are moved the alveolar process will develop around them.

The aim of this paper is to call special attention to the ill-effects of adenoids upon the dental arches and the surrounding structures. When we speak of adenoids, we refer to the mass of lymphoid tissue which is located in the naso-pharynx just posterior to and above the soft palate. Another mass of lymphoid tissue commonly known as the tonsils, the infection of which causes tonsillitis, lies at the base of the tongue, between the anterior and posterior pillars of the pharynx, the palatoglossus and palatopharyngeus muscles, forming the pillars. They are the largest of the tonsils and possess from ten to twenty follicles and crypts. When inflamed, the epithelium

covering of this lymphoid tissue comes in contact with the various foods during deglutition, which acts as a constant source of irritation.

The lingual tonsils are situated at the base of the tongue, between the circumvallate papillæ and the epiglottis. They are rounded masses of lymphoid tissue composed of solitary follicles lying mostly in the tunica propria and causing projections of the surface that are easily seen. To these we cannot refer as being an absolute causative factor in mouth-breathing, but they are in all probability a contributing factor.

The pharyngeal tonsils, which are called "adenoids" and to which we have already referred, are situated on the posterior wall of the naso-pharynx above the level of the soft palate. Their structure is similar to that of the faucial tonsils, except that they are more vascular and contain less connective tissue; the crypts are five or six in number and are clothed with ciliated epithelium. It is the hypertrophy of these that causes the majority of mouth-breathing in children, with the resulting narrow and undeveloped arches. Just anterior and a little above the level of the pharyngeal tonsil,

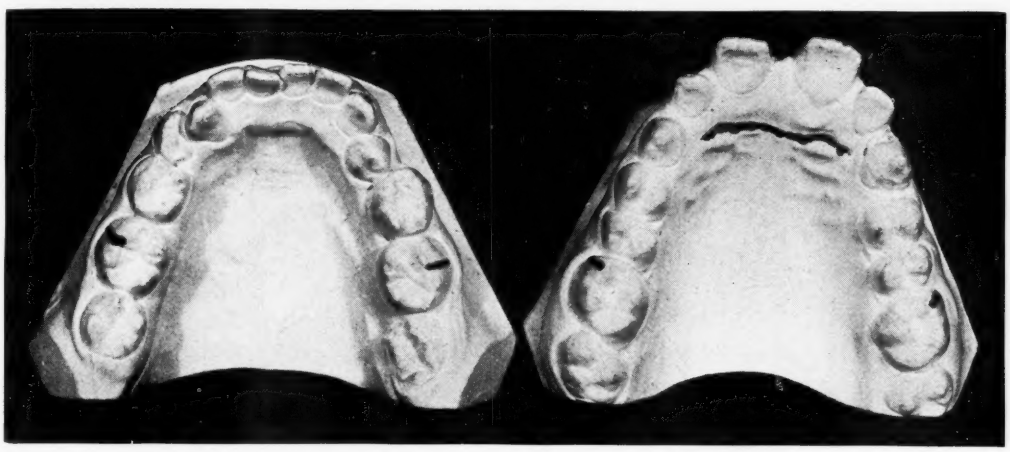


Fig. 2.—Showing how the lower incisors encroached upon the gums of the upper arch.

we find the two openings—the posterior nares, which are the communications between the nasal cavity and the naso-pharynx. The eustachian tubes leading from the middle ear make their opening in the naso-pharynx, a little anterior and on the level with the pharyngeal tonsil. On account of the location of the tube and tonsil, hypertrophy of the tonsil will obstruct the passage of air to the tube and greatly interfere with the hearing. The hypertrophy of the pharyngeal tonsil is generally the result of some irritation or infection early in life and unless removed will soon bring about a condition that is self-progressive. As a result of the increase in size of the lymphoid tissue, the naso-pharynx is closed and mouth-breathing becomes a necessity and is not the result of habit as some have stated. All of the muscles of expression, mastication, speech and deglutition, play an important part in the molding and development of the face and they are all interfered with in mouth-breathing.

Fig. 1 illustrates a typical condition resulting from adenoids and I might mention that it carries a sad history due to ignorance and neglect

upon the part of the parents, which is the case in most instances. The parents are in fairly good circumstances, reasonably well educated, and have only the one child. They have always lived in a city where the best advice could be obtained, have been aware of the fact that the child was a mouth-breather from childhood, but had never consulted a physician, dentist or orthodontist for the removal of the adenoids and the correction of the mouth-breathing and facial deformity. The facial deformity has almost reached a repulsive stage. It was only when the lower anterior teeth erupted sufficiently (on account of the lack of occlusion) to encroach upon the gum tissue of the palate, three-fourth of an inch distal to the upper in-

Fig. 3.—Showing adenoid appearance.

cisors, making the gums extremely sore,—that they did seek relief for the deformity. The dark line on the palate of the upper arch, as shown in Fig. 2, indicates the depression in the gum tissue made by the lower anterior teeth. This patient is now sixteen years old, small for her age, anæmic, no chest development, and demented. Individually, the teeth are well developed, and at the time of taking the impression the lower second deciduous molars were retained.

Fig. 3 shows the profile with the protrusion of the upper anterior teeth. The appliances were placed on the teeth two months ago but the teeth are responding very slowly to treatment, which fact I attribute to the physical condition of the child.

MALOCCLUSION IN YOUNG CHILDREN.*

By Joseph E. Johnson, D.D.S., Louisville, Ky.

IN CONSIDERING the subject of malocclusion in young children, I am not going to advance any new theories, but will just explain what I found in the examination of one hundred and fifty-four children. These children ranged in age from one to three years and were in a contest to decide which was the most perfect baby. The contestants were graded according to the score card of the American Medical Association.

I believe the children were above the average in health and intelligence and yet sixty-two out of the hundred and fifty-four had some form of malocclusion.

The illustrations which accompany this paper show some of the different forms of malocclusion that I came across. Some of these models are of older children, but they will show the different types of irregularities that I found.

Fig. 1 is the model of a child three years old. I believe it is very nearly normal for a child at this age, as you will notice there is a normal mesio-distal relation of the molars, and the overbite is about what it should be.

In Fig. 2, we have a model that I believe shows the beginning of a case of Class II, Division 1. The child is four years of age, and has had its tonsils and adenoids removed, but still continues to breathe through its mouth. You will notice that the molars are in a normal mesio-distal relation, but that the upper incisors protrude over the lower almost a quarter of an inch.

Fig. 3 shows another case of mouth-breathing. This child is five and one-half years of age, and had its adenoids removed when it was two and one-half years old. The lower arch is in bilateral distoclusion, as you can see from the position of the deciduous molars. The upper first molar has erupted but the lower has not; but it can be seen from the upper molar that the lower molar will erupt distal to normal. There is an excessive overbite in the incisal region, and a protrusion of the upper anterior teeth, or I prefer to say in this case, a retrusion of the lower; for in treating this case, I am not retruding the upper anterior teeth at all, but am bringing all the teeth in the lower jaw forward.

Another type of malocclusion that I came across very frequently, and of which I was unable to obtain a model, resembled Fig. 3, in that it had an excessive overbite, but the arches were in a normal mesio-distal relation as in Fig. 2. Between seventy and seventy-five per cent. of the children suffering from malocclusion came under these three types.

In Fig. 4, we have a case that undoubtedly shows a deformity due to thumb sucking. The child is six years old, and has a history of having sucked the thumb on her right hand ever since birth. Fig. 4a is a side view of the same case.

In my examination I found only five cases that I was positive were caused by thumb or finger sucking.

*Read before the Alumni Society of the Dewey School of Orthodontia, Kansas City, Mo., February, 1915.

Fig. 5 is a model of a child three years old, which shows a contracted arch and a marked irregularity of the lower incisors. I believe this should be considered a case of malocclusion even at this early age; for if the arch is too small when the deciduous teeth erupt, I can see no reason to expect it to be large enough for the permanent teeth.

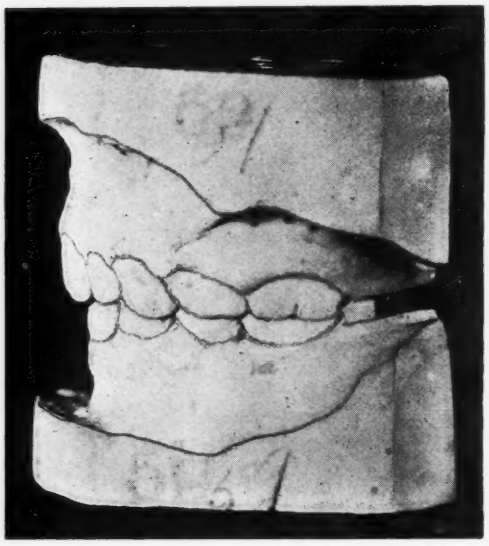


Fig. 1.

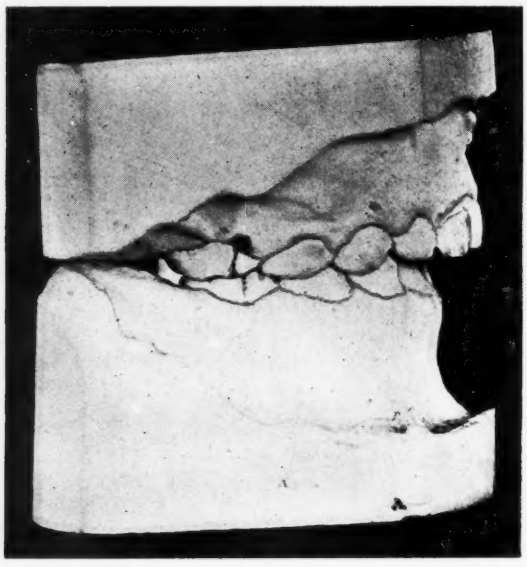


Fig. 2.

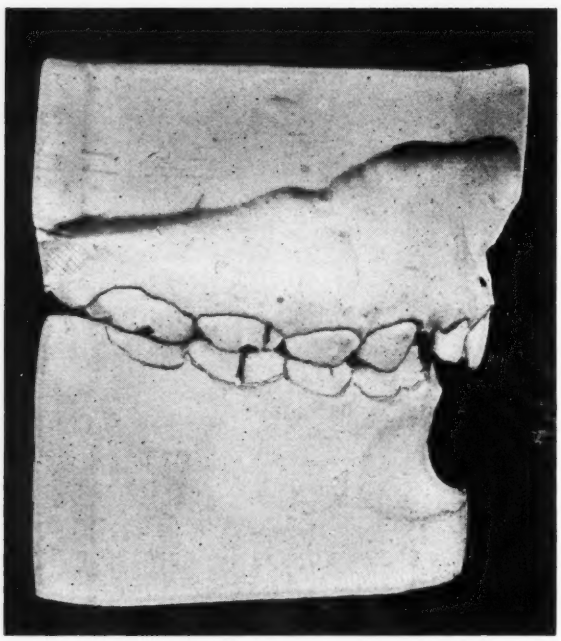


Fig. 3.

Fig. 6 is a model of a child five and one-half years old. The molars are in lingual occlusion on the right side, and there is a slight infra-occlusion in the incisal region.

Of course there were other forms of malocclusion, the same as we find in Class I of the permanent teeth, but I did not come across any of the Class III cases.

In testing the mental condition of these children, the standard mental test of the American Medical Association was used. Twenty is considered

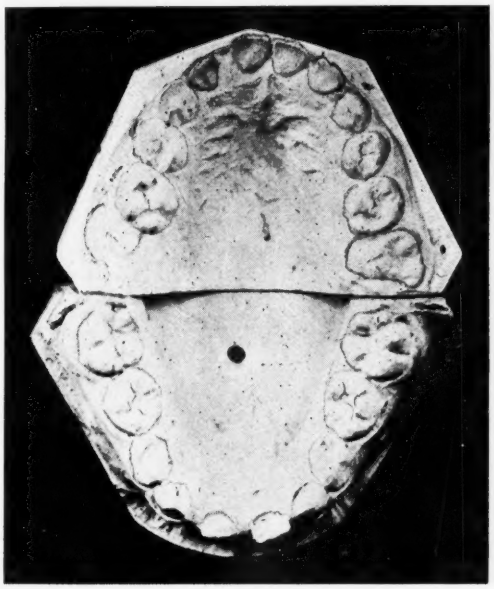


Fig. 4.

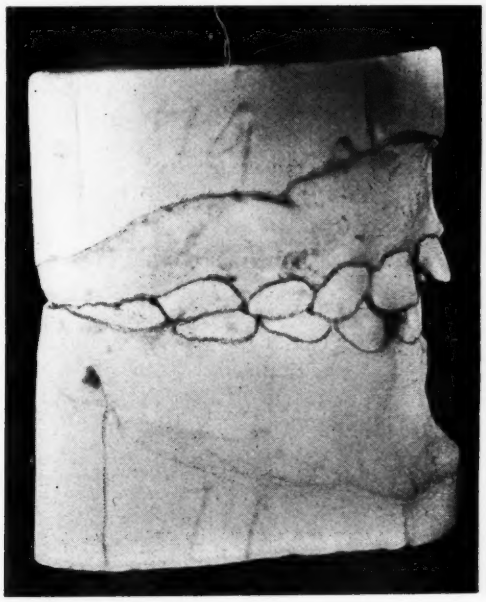


Fig. 4-A.

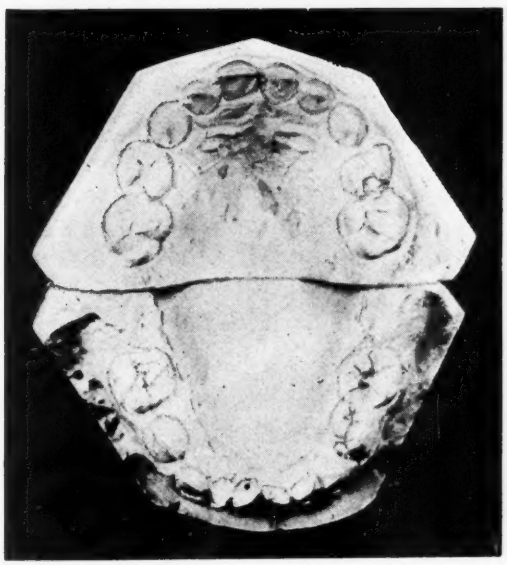


Fig. 5.

perfect. In averaging up the mental test, I found that the children with malocclusion averaged 15.856, and the children with normal occlusion, 15.431; which gives the children with malocclusion the advantage of .425 of a point. So it would seem that at this early age the mental condition is not affected.

In the physical test 80 is considered normal. The children with malocclusion averaged 70.033, while those with normal occlusion averaged 73.486, making the children with normal occlusion 3.453 better physically than those with malocclusion. Now if we take 1.5 points from 3.453, this being the points counted off for malocclusion, we still have the child with normal teeth, 1.953, or almost two points better than those suffering with malocclusion.

In regard to the feeding of these children, of those with malocclusion twenty-two out of the sixty-two had been entirely bottle-fed, or only breast-fed from one to three months, making the percentage of the bottle-fed babies 35.5. Of those with normal teeth fifteen had been entirely bottle-fed, or only breast-fed from one to three months, making the percentage of those bottle-fed 16.3 These figures show that the artifically-fed babies are much more liable to malocclusion than those that were breast-fed.

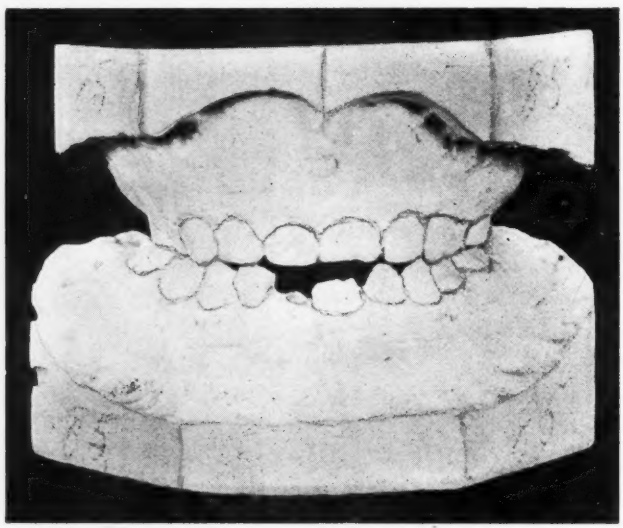


Fig. 6.

As regards the condition of the adenoids and tonsils in these children, I do not believe the examination was made in a thorough enough manner to enable us to draw any conclusions therefrom, so I have left them out entirely.

In summing up my remarks, there are five things which impressed me in this examination, which may be enumerated as follows:

1. The early age at which malocclusion begins to show.
2. The number of children that suffer from malocclusion at this early age.
3. That the mental condition is not affected at this time.
4. That the child's physical condition has already begun to be impaired.
5. That the tendency of the bottle-fed babies towards malocclusion is much greater than the breast-fed.

American Society of Orthodontists Meeting.—There will be a meeting of the American Society of Orthodontists, held Monday, August 30, 1915, at 9:30 A. M., at San Francisco, in the room assigned to the Orthodontia Section of the Panama-Pacific Dental Congress. It is respectfully requested that as many members of the American Society of Orthodontists, as possible be present. F. C. KEMPLE, Pres.; F. M. CASTO, Sec'y-Treas.

THE "OPEN BITE" (MORDEX APERTUS CARABELLI): ITS ETIOLOGY AND TREATMENT.*

By Dr. G. Lind, Amsterdam.

YESTERDAY when in the discussion of Dr. de Vries' paper I spoke about the retention of open bite with headgear, a headgear which I demonstrated last year in Holland, I thought that I might be able to give you some few interesting points upon the etiology and treatment of the open bite, and Dr. Anema, our President, was kind enough to say I might have a little time this morning for doing so.

Of all the different malocclusions which we dentists meet with in practice I think that malocclusion generally called the open bite takes a special position, not alone from the point of view of treatment but also from the etiology and classification, which justifies us to discuss it separately.

In 1831 the open bite was described probably for the first time in a scientific manner by Carabelli in his "Handbuch der Zahnheilkunde", under the name of Mordex apertus, a name which I prefer to use not alone because it is symptomatic, but more because by using this term we avoid confusing it with other kinds of irregularities where the bite can also be "open", but where the conditions are different from the "real open bite".

In "Mordex apertus Carabelli," we understand (using the description of Dr. de Nevreze of Paris, which he gave in a paper delivered in Berlin at the International Congress), "a vertical dento-facial irregularity, where the naso-mental distance is greater than normal in proportion to the profile of the patient, caused by a deformity of the jaw itself". This description brings out the real open bite as a deformity of the jaw itself and not of proc. alveolaris alone, as is the case in other kinds of open bite. This last kind of open bite is best described by the Angle nomenclature as infra-occlusion of the anterior teeth. The Angle classification and nomenclature is very practical, although perhaps not absolutely scientific, but for the Mordex apertus it would be a little difficult to use it. If we did use Angle's nomenclature, then it would be "an infra-occlusion of the greatest part of the teeth in the mouth where the distance between the two arches is progressive from posterior forward and where the mesio-distal relationship between the first molars, which often do not occlude, gives the class to which it belongs." According to Angle, we understand infra-occlusion to mean "the position of teeth being in non-occlusion caused by either an underdevelopment of the alveolar process or not fully eruption", then you will understand that his nomenclature is rather lacking for this kind of deformity.

The clinical symptoms of Mordex apertus are well known; you recognize this deformity as soon as the patient comes into your room. The stupid appearance of the patient, due to the fact that in most cases the lips can hardly be closed, is very typical. The chief symptom, though, is that only the posterior teeth, it might be all the molars but often only the wisdom

*Reprinted from the Transaction of the European Orthodontia Society, Sixth Annual Meeting, London, May 11 to 14, 1913. Edited by the Oester-Ungar. Vierteljahrsschrift fur Zahnheilkunde, Vienna.

teeth, occlude, when the jaws are brought together. The distance between the arches is progressive from posterior forward and it is impossible for the patient to bring the incisors together—i. e., the bite is open. Another less important symptom, given the first time by Carabelli, are the small jags on the incisal edge, which you otherwise only see on newly erupted teeth and not on teeth that have been used for a while.

With regard to the cause of this kind of deformity, you will find that the opinions are very different. In trying to find out what the cause might be I think I have read most of the literature on the subject, but almost every author has his own theory.

It is said in the earlier literature, that the cause of the open bite is abnormal eruption of the molars or hypertrophy of the proc. alveolaris in the molar region. One writer claims that the real open bite is always combined with the disarticulation of the mandible. Talbot claims that the only cause is that the rami of the mandible are too short, and there is an inharmonious development of the mandible. Others claim that the real cause is due to extraction. One molar is extracted and the other is tipped, the distal edge forcing the bite open. Others again claim that it is the bad development of the os incisivum, which is caused by chronic diseases in childhood. Thumb sucking, biting the lips and fingers and other bad habits are also supposed to be direct causes. It is claimed that mouth-breathing is probably a cause, and the explanation is given in this way, that the muscles which keep the mouth open bend the lower jaw downwards and we get the obtuse angle of the posterior margin of the mandible. In the last edition of his book Angle says that the cause of a good deal of open bite, and he includes the Mordex apertus and the infra-occlusions, is absolutely unknown, but for many of the cases he claims that keeping the tongue between the front teeth or other bad habits such as biting the lips or fingers may be the causes. Van Broadus Dalton two or three years ago wrote that the only direct cause of the real open bite which he had been able to find in qu'te a number of cases was supra-occlusion of the molars, directly traceable to prolonged retention of the second milk molars. Others claim that it develops because the molars are sore and the patient is unable to close the mouth. There are indeed a good many opinions and probably a good many more that I cannot remember.

I was fortunate enough to be able to examine a great number of patients with Mordex apertus, not alone in my own practice but also at the Policlinic of Zielinsky in Berlin, where strangely enough I found a proportionately greater number of real open bites between the different malocclusions which presented themselves than I found elsewhere.

My conclusions from these clinical examinations, which, to a great extent, are only a confirmation of what others before me have found, were:

1. The Mordex apertus is not very often seen in the deciduous denture. We see it first after the eruption of the first molars, and the deformity increases slowly until the eruption of the second or third molar has taken place.

2. Often this Mordex apertus is complicated with narrow arches and crowded teeth, irregularities which cannot be the direct cause of the open bite, and they are excluded because we often find very great deformities with

arches quite normally shaped and where the proportions between the teeth in each individual arch are absolutely normal, which also is the case between the erupted part of the teeth (the crown), processus alveolaris and corpus maxillæ. In infra-occlusions this is not the case.

3. The Mordex apertus is proportionally more often found in children of the lower classes, and we often find rickets or other constitutional diseases present. In Berlin, where most of the patients who came to the Policlinic were children of the lower classes, and where, proportionally, so many cases of Mordex apertus were found, it also struck me how many typical symptoms of rickets were to be found. (Hypoplasia of the teeth, caput quadratum, pectus carinatum, etc.)

Fig. 1.

4. In all cases of Mordex apertus, I found that the posterior angle of the mandible was more obtuse than normally, according to the age of the patient. This has later been confirmed with examinations on skulls.

5. By examining the masticating muscles I found that the muscles were rather weak, and it was nearly always said that the patients never chewed their food as well as they should. It struck me that the children with Mordex apertus were always unable to exert the same power with the masticating muscles as other children. In the older patients, I found, but not always, hypertrophy of the alveolar process in the region of the molars and in the most cases a tipping lingually of the lower incisors. Mouth-

breathing, adenoids, chronic pharyngitis, tonsillitis, deviation of septum nasi and also different kinds of bad habits were often, but not always found.

A study of some of these clinical investigations, with a rather extended examination of skulls in different anatomical museums, has led me to consider that the direct cause of Mordex apertus is always a deformity of the lower jaw, which can be either (1) hereditary or congenital; (2) accidental, by which I mean such causes as fractures, macro-glossia, contraction of the soft tissues after operations, etc; (3) last, but not least, lack of development of the mandible caused by deficient mastication predisposed by constitutional diseases in childhood. These, I think, are the chief causes for most kinds of Mordex apertus.

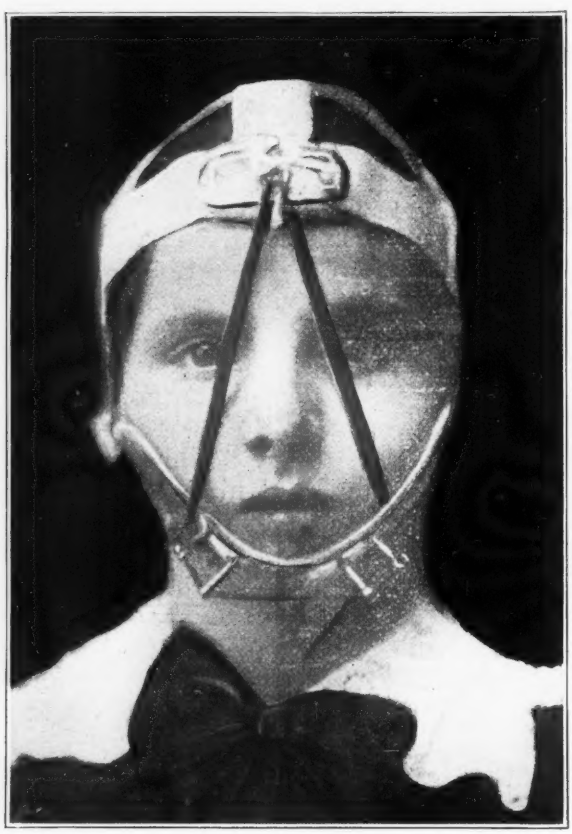


Fig. 2.

You all know that the form of a bone is the expression of the bone function and that the structure of it is made so as to give the highest amount of power to the forces (i. e., the contraction of the muscles) working on it. Normal form and normal structure of the bone have to be considered as the result of the different mechanical stimuli working harmoniously together upon it. You probably all know the researches which von Meyer made about forty years ago on the structure of the femur. Walkhoff, Toldt and others have followed his investigation and have studied the mandible and have endeavored to discover how the structure and the form of the mandible were influenced by the contraction and working of the different muscles.

In the case of the Mordex apertus, the only deviation of the bony structure from the normal form that I have found on the skulls, which deviation could be considered as a direct cause of the open bite, is the obtuse angle of the mandible, and this deviation is the result of inharmonious mechanical stimuli during the growth of the jaw. If the lower jaw is to be normal in form, we must have a harmonious working between all the muscles, but if a child does not chew its food well then some muscles are not exercising the same physiological stimuli on the bone which other muscles are, and the result is a difference in the growth of the bone, which results in disharmony.

That bone growth largely depends upon the muscular activity is a fact, and when the masseter and the external pterygoid muscle, the masticating muscles, are underdeveloped we absolutely will have less growth in the re-

Fig. 3.

gion which they stimulate, that is, on the posterior margin and the base of the mandible near the angle, but normal growth where the mylo-hyoid, the digastric and the genio-hyoid muscles are inserted, because their function is not deficient. As Sim. Wallace states in his essay on causation of dental irregularities, does "the growth of the mandible not only takes place by growth beneath the articular cartilage, but also by deposition of bone at the angle and posterior border of the ascending ramus, while it is absorbed on the anterior border of the ramus, and in general is moulded into its ultimate shape by these processes". When studying the normal development of the mandible, you will see that the greatest change in the angle takes place when the permanent molars erupt, which shows why the Mordex aper-

tus first manifests itself after the complete eruption of the first molar and becomes greater when the other two molars erupt. The erupting power of the molars really forces the jaws apart.

It is a clinical fact that a tooth elongates when the antagonist is lost, and you might say: "why don't the anterior teeth in these cases do that?" In examining several hundred mandibles in the Anatomical Museum of the University of Amsterdam I found a large number with obtuse angles, and with such a compensatory elongation of the anterior teeth, that they could be brought in normal occlusion though with the upper ones,—those mandibles were mostly heavy and strongly built. But in rachitic jaws no elongation had taken place, therefore the cause, to the non-elongation of the teeth in the case of Mordex apertus, may be attributed to a low vitality in the bone caused by constitutional diseases during childhood. The narrow arch in the upper jaw, which often is found as a complication to the Mordex apertus, is also typical as a result of rickets. The mouth-breathing, adenoids, chronic pharyngitis, and the different bad habits often found with these patients are to be considered as secondary complications and not as causes.

With regard to treatment. If we want to treat Mordex apertus in the ordinary way as put forward by Dr. Angle, we elongate the teeth until they are in occlusion, but in this way we do not improve the facial outlines. You can all see that these patients have inharmonious faces,—the naso-mental distance is greater than normally,—and since with this kind of treatment we have to get the alveolar process to grow exceedingly high, especially in the region of the incisors, the retention of the teeth in normal occlusion is often very difficult. Then not alone does it take a long time before the structure of this new-formed bone is quite normal, but the bad habits which often follow Mordex apertus are not so soon forgotten and they can really produce an open bite again. It is quite true, as stated by Dr. Angle, that the treatment is very long and difficult, and we never can be assured that our treatment will not be a failure.

As in a case of Mordex apertus the upper jaw can be quite normal, and the relationship between the erupted part of the teeth, the alveolar process and corpus mandibulæ could be normal also, then the logical way to treat this deformity would be to bend the mandible at the angle until the teeth are in normal occlusion, and the facial outlines corrected. For this purpose I have constructed a bandage which, in the few cases (young children) where I have been able to use it, has proved to be of extreme value. The illustrations shows best how this bandage is constructed.

The chin cap must fit perfectly and has to go as far back toward the angle as possible. The head-gear can either be made of linen straps as shown here, or of aluminum bands (whichever is preferred). The cushion on the front of the head must be soft and has to be as broad as possible but care must be taken that it comes below the hair margin, otherwise the hair will fall out, as a result of the pressure exerted by the elastic band in the front. The two straps going down at the angle only serve to keep the chin cap in place, and are not elastic.

My treatment of a case of Mordex apertus is therefore divided into two parts. First I correct the different irregularities in the ordinary way with

the Angle appliances. Often a small extrusion of the upper front teeth is needed, as an underdevelopment of the os incisivum, which really aggravates the opening, is often found as a complication.

Then I construct my bandage, the manipulation of which is very simple. The elastic band in the front, which is not to be used too strong, bends the mandible over the occluding molars which serve as a fulcrum. The straps at the angle which only exert a dead power, prevents the ligaments at the articular joint from being stretched. The bandage (which of course will have the most value in the treatment of young children, as soon as an open bite seems to develop), has to be worn at night only, otherwise the elastic in the front might hurt the eye sight.

The occluding molars will of course be depressed a little, as they have to serve as a fulcrum, and it will be advisable to let the patient wear the bandage one, perhaps two years, after the treatment is finished, as a retaining appliance.

DISCUSSION.

The President said the question of the open bite was a very interesting one and it was well known that the condition was very difficult to treat. If something really practical came out of Dr. Lind's work, orthodontists would be very grateful to him.

Dr. de Vries said he had not used a headgear of the sort shown by Dr. Lind, but the one Dr. Law and he had been using had much the same superior attachment. They had been using a wire frame but were also making leather frames. The chin piece extended from behind the angle and covered the entire chin, extending over the mental protuberance. One rubber was attached at the angle and the other at about the region of the first bicuspid tooth. The method of having a posterior elastic force had greater influence in the bending of the mandible than an anterior force of the kind shown. The apparatus shown by Dr. Lind was a very good one.

Dr. Quintero said Dr. Lind's apparatus seemed to be very practical and he was sure that very good results could be obtained from it. He had not had many cases in his own practice, but there was one which he thought it would be interesting to describe from the standpoint of etiology. It was the case of a young girl of about eighteen or nineteen who had an almost normal occlusion. Her anterior teeth began to separate, and little by little she got an open bite. She was examined very carefully and the X-rays showed that her wisdom teeth were growing and were more or less impacted and were touching on the second molars and elongating them, and that naturally prevented her from closing her mouth. After extraction of the second molars she had to wear a headgear of the type described by Dr. de Vries, and after a short time everything came back into perfect order. He was not at all an advocate of extraction, but he believed there were a few very rare cases where it was necessary to extract a tooth or two, as in the case he had mentioned.

Prof. Chiavaro said with regard to the question of Mordex apertus being hereditary, he should like to have some further information on the subject. He believed more in mechanical forces. He had seen some three or four cases of open bites in children, in the temporary teeth, and he thought the treatment should be divided into treatment for temporary teeth and treatment for permanent teeth, and the latter should be divided into two sections, one for young children and another for old patients. He had had a case similar to that reported by Dr. Quintero in a gentleman twenty-one years of age, who came from a good family. The patient stated that while he was young he could close his teeth but that since the eruption of the third molar he had been unable to do so. It therefore seemed that the eruption of the third molar might act so as to open the angle of the mandible. In the next case that came before him he should try something to assist Dr. Lind's headgear, i.e., a vulcanite capping piece over the occlusal surface molars, which would act as a fulcrum, and surely would be of assistance in bending the mandible. Probably not every

one had noticed that the mandible often is bent after extraction of the first permanent molars.

Dr. Hans Hecht said that in the most cases of open bite which he had had to treat in his own practice, the molars were usually found elongated. It was only by the use of a headgear and rubber straps that the molars could be depressed and the bite closed, and he was sure that Dr. Lind's bandage would serve that purpose. He believed oftentimes open bite came into existence with the eruption of the wisdom teeth.

Mr. Boelger said his rather limited experience of the subject appeared to show that the majority of the cases of open bite were due to the causes put forward by Professor Chiavaro. The eruption of the permanent teeth seemed to have a great amount to do with it, because there was a great difference between the percentage of cases in temporary teeth and in permanent teeth. With regard to the wisdom teeth causing the opening in the anterior teeth, the same thing seemed also to take place when the second molar came into occlusion; by elongation, it seemed to have the tendency to prop the mouth open and the result was a deformity. With regard to the treatment, he felt inclined to rely more upon the apparatus shown by Dr. Lind than on the apparatus described by Dr. de Vries, because he thought that with a pulling force on the front part of the jaw the fulcrum should be left free and the fulcrum was the back part where the molars occluded with each other.

Dr. Harwood said that he did not quite understand why the teeth in the open bite, in very young patients, did not elongate as other teeth do which have lost their antagonist.

Dr. Weinberger said Dr. Younger had found it necessary to produce an open bite artificially for a child. The child had four lower incisors, four upper incisors, and the first molar of the permanent teeth. The lower incisors commenced to be abrased by touching on the upper and there was a slight amount of irregularity. In trying to correct the irregularity Dr. Younger found he could not do so on account of the closed bite. He therefore placed two gold caps over the temporary molars, so as to enable the first permanent molar to erup a little more, which it did in about three weeks, and then the regulation was continued.

Dr. Rubbrecht said he had seen a few cases of open bite of the kind described and had always noticed an under-development of the upper jaw as well as of the lower jaw. The upper teeth were also in infra-occlusion. He wished to ask Dr. Lind how he was going to correct the deformity by the headgear, because it seemed to him to be quite necessary to bring about development in the upper jaw as well as in the lower jaw by intermaxillary force on the teeth.

Mr. Malcolm said that with regard to the etiology of the open bite it had struck him that it might be caused through some interference with the muscles which closed the mandible. Such a condition might be produced by infantile paresis. For instance it could be imagined that there was some weakness and that the closure of the mouth took place more by the action of the pterygoids, and the closure of the mouth would take place mainly with the condyle in the forward position. Another point that had struck him was that with normal mastication the mascular force of itself would be sufficient to depress the teeth which were in supra-occlusion; at any rate if the muscular force were normal, then those teeth would be forced down into normal occlusion if the theory with regard to the forces of mastication was correct. It was well known that the teeth did not become forced down, or very rarely, if ever, and therefore it would seem that there was something wrong with the muscular apparatus of mastication. He knew from experience that teeth could be depressed in their sockets. If there was a very great opening of the bite and force was applied, say in a person eighteen or twenty years of age, the teeth might be very much depressed and much mischief obtained. Before applying any strong elastic force for any period it would be advisable to see if there was room to accommodate the roots of the molars which were in contact.

Dr. Lind, in reply, said he formerly used an appliance like that which Dr. de Vries and Dr. Law used in Berlin but he now preferred this kind, because with the latter the power was obtained just where it was wanted and it was easier to bend the mandible. With regard to Dr. Quintero's remarks, he quite understood that it was easier to bend the jaw

when teeth were extracted, as in this case. If it seemed advisable for the patient to wear the bandage during the day he should advise the use of the headgear described by Dr. de Vries. He did not quite agree with Prof. Chiavaro in his proposed method of treating open bite. Sauer used the same method with vulcanite plates between the molars about twenty-one years ago, and Schmidt (Luebeck), also seemed to have used it, but although he had never tried it, he did not see why it was necessary. It was claimed by Prof. Chiavaro that it gave a fulcrum, but the molars themselves were a fulcrum and no new fulcrum was required. It must also have a bad influence on the ligaments of the joint. If he understood Mr. Boelger rightly, he claimed that the permanent teeth caused the open bite. He himself thought the permanent teeth erupted normally but the mechanical stimuli to the growth of the lower jaw had not been sufficient in the earlier years and the lower jaw had not its normal shape. It was well known that the lower jaw, from the embryological stage, was growing more and more downward in the posterior region, but that growth was chiefly caused by mechanical stimuli, and if the stimuli were not there, there could not be a normal development of jaw. If the molars erupted in a jaw with a short ramus necessarily there must be an open bite; otherwise the points of the roots would come out through the lower border. With regard to Dr. Anema's mention of Dr. Case, Dr. Case claimed that the direct cause was mouth breathing, that the patient had to keep the mouth open and a bending resulted. That, however, he himself did not think was right, because if the action of the masticating muscles was normal then the bending would not occur. He thought, the cause was to be found in the weak masticating muscles and insufficient growth of the jaw in the region of the angle. With regard to heredity, most cases were not hereditary, but he was sure some of them were. Why should the Mordex apertus not as well be hereditary as the abnormal mandible by the Habsburgers? He himself also had a case which was absolutely congenital. The physician who had assisted with the delivery of the patient told him that the lower jaw at birth was abnormally shaped.

THE LIGATURE JACK.

By Lloyd S. Lourie, D.D.S., Chicago, Ill.

THE "ligature jack" is intended to take the place of the regular jack screws, having the advantage of giving a lighter pressure and a pressure that is continuous.

It consists of a bar with a hook sliding in a split tube (Fig. 1). Tied from the hook on the bar to the hook on the tube, is a ligature (silk or grass-line), the shrinkage of which forces or rather pulls the bar out of the split tube. The knot of the ligature should be tied in the hook on the tube, to avoid causing the bar to bind in the tube.

Fig. 2 shows one of the appliances which was used for unlocking an impacted lower third molar. Fig. 3 shows the change in the position of the molar. The end of the sliding bar engages a pit or groove drilled in the third molar. This should be made large enough to allow the tooth to tip without binding on the end of the bar. The shrinkage of the ligature exerts such a light and even pressure that the patient need not be conscious of it, nor the anchor teeth strained in the least. Ligatures need not be changed oftener than once in two weeks, and three or four months is sufficient time to entirely unlock impacted third molars.

Fig. 4 shows one of the appliances as used for the expansion of the deciduous arch. The position of the hooks and the length of the split tube

gives some idea of the amount of expansion which has occurred. By the early expansion of the canines and deciduous molars, with the "ligature jack", room is made for the incisors, with little annoyance to the patient and but few treatments from the orthodontist.

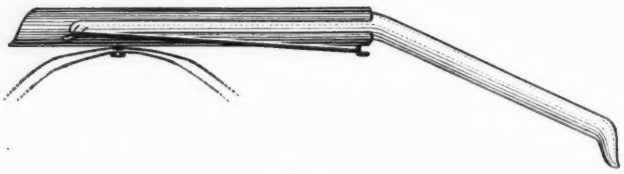


Fig. 1.

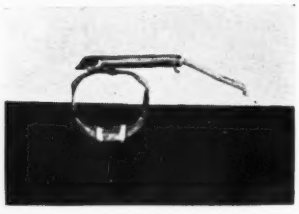


Fig. 2.

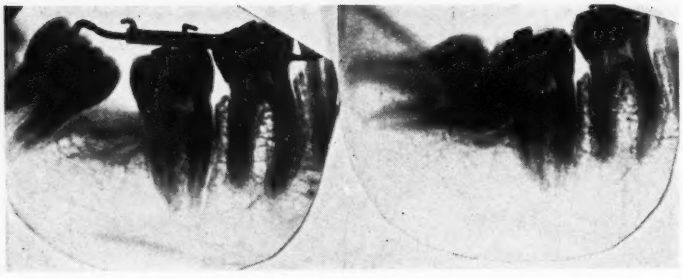


Fig. 3.

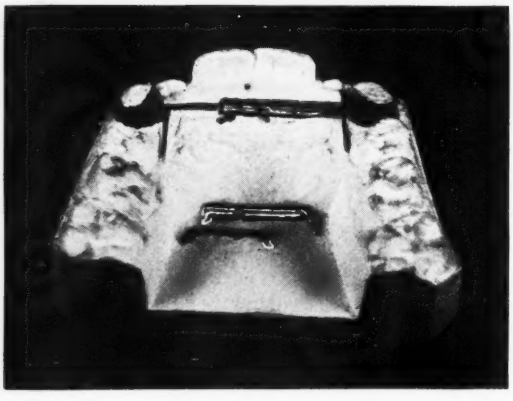


Fig. 4.

In constructing the appliance, care must be taken to see that the bar does not bind in the tube and that the tube is so made that the bar can slide through and will not be displaced.

ORTHODONTIA IN SMALLER COMMUNITIES.*

By W. A. McCarter, D.D.S., Topeka, Kansas.

WITH the development of orthodontia, and the increasing number of students who are specializing in this potent force in twentieth century progress, the question arises: How far from the large centers of population is it practical for the orthodontist to establish himself in his profession? Can that which is necessary and profitable in a city of 100,000 and upward be shown to be necessary and profitable in small communities?

It is patent that all members of this profession cannot live in the large cities, and for the future welfare of the children of today, it is a blessing that they cannot. Can they, aside from general dental practice, live and thrive in the lesser centers of population, becomes then a question vital to the interests of orthodontia.

The steady and wide-spread growth of the public health movement has made the old adage, "Prevention is better than cure" the slogan of the day in matters of hygiene.

The employment of medical examination and the dental clinic in the school has become such a feature in the last few years, that the public, recognizing the benefit of preventive forces, among which is oral hygiene, is not only wil ing to *accept* aid from the physicians and dentists but is *demanding* their help. Nor is it necessary to go to the larger cities to find evidence of this advancement. The smaller and seemingly remote communities where the Oral Hygiene Committee of the National Dental Association has had opportunity to spread its propaganda, are also responding to the call of this new power for efficiency.

Intelligent people in all communities are becoming alive today, as never before, to the evils that grow out of dental irregularities. Slowly, but surely, the comprehension of the disastrous, even tragic, results of neglected dental mal-formation is taking root in the minds of the parents of children and of those who help to educate and protect them.

It is now becoming known concerning irregular teeth:

1. That they cannot be kept clean, thus causing pyorrhea and decay.
2. That the food cannot be properly masticated—the first hindrance to proper digestion, assimilation, and bodily nourishment.
3. That the function of the nasal passages is impeded, causing inefficient respiration, the growth of adenoids, and the tendency to tonsillitis.
4. That the development of the face is affected, producing an inharmonizing of the features tending to life-long homeliness and mental unhappiness.
5. That these physical conditions have their direct product in an undernormal development; the fatal token of degeneracy for the human race.

For the practitioner of orthodontia, the smaller community offers many opportunities.

*Read before the Alumni Society of the Dewey School of Orthodontia, Kansas City, Mo., February, 1915.

The need for his services is not limited to large cities. Children in rural districts and small towns are as liable to the evils of irregularities and malformation as the children of the great cities, while they are less likely to receive general care and supervision from public health authorities. Children of families of moderate means, no less than the offspring of millionaires, have the right to the help of the orthodontist; but generally speaking, the very poor of the city slums may in this line receive more aid to health and happiness than the country boy or the village lass.

In lesser centers of population, the citizens are better acquainted with all that is going on in their community. While an orthodontist might wait long unknown in the big city for the growth of his practice, his fellow-practitioner in the country town or litt'e city is becoming a factor in his community and his handiwork is given the best of legitimate advertising—the approval in home and social discussion.

There should be no real conflict between the orthodontist and the dentist in the smaller communities.

It is impossible for any man in the general practice of dentistry to be a successful specialist. Generalities and specialties cannot combine in one mind. One or the other, generally both, suffer from the attempt at combination.

The only logical condition is the co-operation of the two professions. The dentist who frankly explains to his patient the need of the orthodontist's service does not lose his patient, insofar as his own services are essential, while he increases his own standing by his recognition of his patient's needs and the means of meeting them through another man's line of efficiency.

Again, the dentist in general practice cannot give the special attention which it is the orthodontist's province to bestow. Most dentists find their time too valuable for this kind of work, even if they should have the necessary knowledge and skill for doing it, which very few dentists in any community possess.

And, again, the dentist does not meet the children of his locality. His work, in general, is with those whose diseased teeth need to be cured, filled, bridged or extracted to give place to an artificial set. He has little time for the less profitable consideration of the children's needs. He cannot study, often could not detect the tendencies toward malocclusion which the specialist can discern and correct.

The child is the orthodontist's real field. His place in the smaller community is parallel with, if not bigger than, the place of the teacher and the physician, and comes nearest to the parent in the service he renders to the home.

It is his opportunity, first, to know the child as to himself intimately, and secondly, to know him in all his environment.

The practitioner in the larger city may know the child himself fairly well, but only in the smaller locality can he know the environment.

In this intimate knowledge of the child, the specialist may discover his physical and mental tendencies, insofar as they are controlled by dental formation; his appetites for certain foods, his habits of breathing, sleeping, working and thinking. In the larger knowledge, the environment, the smaller community gives opportunity to know the child's home life, his

inheritance of health and promise of development, the intelligence or lack of it in the parental co-operation with the orthodontist.

Among the poorer classes, or those of more moderate means, there is less tendency to shift from place to place, than in the larger cities, and so range out of sight of the man who must have *time* as a factor in bringing results to his labors.

In the smaller community, the orthodontist may take his place of influence in community interests, may be as much of a force in the church life, and social and commercial life as is the superintendent of the schools, the family doctor, or the dentist.

He may add an element of dignity and intelligence to his place by adding one more mind trained in a special science and a hand skilled in the execution of the practical activity of science. Every community that gains for itself a definite personality, and in that personality there is a representation of scientific knowledge, a mind educated to a definite professional purpose for the betterment of humanity, has acquired a large asset to its community wealth. Such an asset every orthodontist may be in his chosen locality, however small a space its boundary lines may compass.

The orthodontist in the smaller communities has opportunity to confer benefits because he is not hampered by numbers. His work may be known to all the patrons of the community. His field, because it is limited, is covered. He does intensive, rather extensive practice.

There is yet another point for the small community. History is back of us to prove that much of the world's talent comes and has always come from rural communities and not from congested cities.

"Full many a flower may be born to blush unseen," but out of the same soil whereon the blushing blossom perished many a majestic tree has rooted deep and grown to magnificent proportions and great usefulness. Up *from* the farm, from the village, from the little city have come the hard-headed, well-poised youth to do the world's big work in the great metropolis of a nation.

How vast a field, how wide a vision opens before the man whose work is of that conscientious, intelligent brand that gives it something of a consecration in his own eyes, when he can believe that through the skill of his hand and his scientific knowledge he can open the way from defectiveness to broad usefulness. When he can measure a little toward Emerson's measure of the stature of greatness in the sentence, "He is great who confers the most benefits."

But supposing there be only a few to rise from humble places to the great heights of world service. The humbler ranks of life, the common folk of the little city and town is improved in all its interests by every grain of improvement given to the health, beauty and intelligence of its commonplace little children; and one of the instruments for this improvement is always in the hand of the orthodontist.

In conclusion, this is not a dreaming theory of our professional life. It is the real possibility of hard and fast actual practice. The future is bright for the orthodontist. Never before has there been such an opportunity for his service as opens today before him. The demand for orthodontia is steadily growing. Children must be safeguarded in order that efficient men

and women may develop. Society is awakening to this fact, and parents and teachers will find more and more that co-operation with the orthodontist means the removal of life's handicaps.

The old admonition to "despise not the day of small things" has lost its force. There are no more any small things to despise. To the orthodontist who realizes fully the dignity and obligation of his calling, there are no small communities. That field is big wherein big service is given.

DISCUSSION.

Dr. Benton: Mr. President, I presume you called on me because you thought I came from the smallest community. I probably did. The topic of the paper is truly adapted to my location. If Topeka is a small community, mine is only a dot.

I agree with the Doctor in that portion of his paper in which he states that a general practitioner, or a man in general practice, has not much business in specializing—that is, in taking up a special line of work. I have tried to do something of this kind in orthodontia and have been—I won't say unsuccessful, for I have done some work—but the tendency has been to neglect the children. I think it is not because of lack of liking for the work, but I believe it is habit. The probabilities are, the thing you do you like to do. I have filled teeth and made crowns and done work of that kind so long that I do not feel like I can give it up. I feel like I would rather do that than to work for children. However, I realize there is a great field for the orthodontist. I took up the work, not with the idea that I would go to the city or to some metropolis and spread the light there; but rather, that I would do what I could for the country community, on the idea that they were entitled to the service the same as those in the city; but I find it an uphill business. Of course, salesmanship enters into the selling of your work, in the first place; and, in the second place, as I have stated, you have to like the work—"to get the habit"—before you can make a real success of it.

Most of the paper is entirely too literary for me to attempt to discuss it; but simply the matter of the location is about all the point I can talk about. It was indeed a fine paper from a literary standpoint. "Beautiful" would be my idea regarding it.

Dr. McBeth: It all depends on what Dr. McCarter means by a "small community." A man living in New York might look on Chicago as being a small town; or a man living in Chicago might look on St. Louis as being a small town. So, as I say, the matter is relative. When a man talks about the community being small it depends on what he means. When I finished the course I had the opinion that a man could locate in almost any small town of five thousand people and have as much work as he wanted to do; but I find out the average dentist may feel that he wants to look after everybody and the welfare of all the children in the community. The man specializing finds that the old man holds a better grip on the community than he the specialist can get for some time. It is necessary to educate the public to the need of orthodontic treatment. We also must educate them that the man without training cannot do as good work as the man with training. This is a very difficult thing to do, for the general practitioner often wishes the patient to think he can do everything. That may be a wrong idea, but nevertheless we have that to contend with. There are plenty of malocclusions to treat in the small community, but to get them to treat is the next question.

Dr. A. C. Gifford: Dr. McCarter is located in a larger place than I am, and I am located in a place somewhat larger than Dr. Benton, and apparently it is all in the way the laity is educated as to the services a professional man has to offer.

Now, it seems strange, but in the city where I live, I have acquired somewhat of a reputation for making people beautiful. Not long ago a lady consulted me about her daughter and after talking a little while, she remarked, "So you make people beautiful." I did not know whether to treat it as a joke or not, but I gathered from her further remarks, that the reputation had been attached to me in some manner. Of course everybody does not want to be made beautiful. Some are satisfied with their looks, but when you find a parent with

a daughter to be brought out into society she never can be made to believe she is beautiful enough, and if a little orthodontia treatment is done in the correct way, and is finished up as it should be, there is always more or less improvement. If in a small community, the laity is educated to the point of appreciating that something can be done to beautify, and to improve the efficiency of the dental apparatus, in the way of mastication, there is no question but that the services of the orthodontist will be in demand.

Dr. Federspiel: I believe it is John R. Paxton who said, in substance, whatever you do in this life do well. If you build a mousetrap in the wilderness and build it better than anyone else, the world will wear a pathway to your door. I believe that a man could be recognized as an expert orthodontist in a town of 20,000 to 40,000 inhabitants to such an extent that the surrounding dentists, and even those throughout his state, will look upon him as a master of his work. The profession will build a pathway to his door.

I know a man in the state of Wisconsin, in a city of 20,000 to 35,000 inhabitants, who is now recognized as an expert on anesthesia. I have seen that man put patients to sleep and keep them asleep—resembling the twilight sleep, a most peaceful slumber, and he could go on and prepare cavities in the teeth. He knew every symptom of danger. That man has built a remarkable practice. He has drawn people out of the city of Milwaukee to his small town with the desire of having dentistry done under his anesthesia. Even the surgeons are calling upon him to give anesthetics, because he has become a master of that one subject. He can stand before the best anesthetists in the country and argue and prove his points to the complete satisfaction of all.

I believe a town of 20,000 to 40,000 is large enough to support an orthodontist if that orthodontist has mastered the principles and practice of orthodontics.

Dr. Dana: Dr. Federspiel has touched upon a phase of the subject that appeals to me and touches me rather personally. He starts in at 20,000 and goes up to 40,000. I come within that limit. The only question in my mind is, how long a time would it take at acquire a reputation where one would be recognized as being a specialist of merit? I have taken the Dewey course and have enjoyed it very much and have been moderately successful in general practice, and I have come to the cross-roads; I really hesitate to give up my general practice and take up orthodontia as a specialty, but I would like to do it. Unfortunately, or perhaps fortunately, as the case may be, I have started a number of cases since taking the course. I have had some seven cases and they are all very interesting. I am getting a fair degree of success with them, but I find that I have to neglect my general work if I am going to be successful in the work of orthodontia. When I do that, it means a cutting down of income and I need all the income I can get, having a growing family.

I would like to ask Dr. Federspiel how a man can establish a reputation without devoting a lifetime to it, and reap some of the reward before he gets gray-headed.

Dr. Federspiel: I believe I can answer it in this way. In the city of Rochester, in the State of Minnesota, there are two men, Charley and Will Mayo. For a long time they practiced general medicine, but devoted considerable time to the study of surgery—had attended all the clinics of this country and Europe and attended all the medical meetings, and were great students. Then surgery got the better of them. They acquired more patients in surgery than medicine, and finally the world built a path to their door. They did not know how, but like Topsy, they just grew. And so it is in orthodontia. You don't have to graduate from the Dewey School and then go out and say "I am a specialist." That reminds me of a young man, who, having a rich father, was not making a success of medicine. He went abroad to Europe ostensibly to study, but soon realized that in order to be a specialist he had to get down to hard strenuous work, and he was satisfied to sit at the student's beer tables and let the other fellow use the scalpel. Then he went from Vienna to Paris and then to London, and after a time returned to his home and announced himself as a specialist.

"I have just returned from oversea,
Send your cases straight to me,
I am a specialist, by gee!
And I belong to the State Society."

So you see that does not make a specialist. The only thing to do is to do as I did in the City of Racine. I had a good practice there. I gave it up and went to Milwaukee. I was there to study medicine. I could not very well study medicine and practice orthodontia. I gave up my practice in Racine to my brother and walked out, leaving him my entire practice; went to Milwaukee and opened up a two-by-four office. I gave up four years of my life and seven months' hospital work as an interne, yet I realized in the city of Racine I could have built up a splendid orthodontic practice. I had had a good practice in general dentistry, but a great part of my work was devoted to orthodontics. I had a number of cases on hand, which my brother was taking care of, and I occasionally had to go back to Racine to oversee those cases. You have to continue your general work, but at the same time you can become a master of orthodontics. You just grow into orthodontics. Dr. Dewey, Dr. Angle or no other living orthodontist in the world can make an orthodontist in eight weeks. I am just beginning in orthodontics, and I have been at it fifteen years.

Dr. Reed: Dr. McCarter speaks about small communities and large communities. You know what the stump speaker usually says when he refers to Kansas. Kansas is no small community. She is two hundred miles wide, four hundred miles long, nine thousand miles deep and as high as the sky. Dr. McCarter is doing good work in Topeka and he is having the cooperation of many of the general practitioners there—not all of them. It has been my privilege and pleasure to send some work to Dr. McCarter. I have been doing more or less orthodontia for several years, but have been so busy with other things at times that I have side-stepped it. It has been fascinating to me, but I have allowed other work to take precedence. Dr. McCarter is largely responsible for my taking the course. He has encouraged me, and we have worked hand in hand and will probably continue to do so. I do not know that I shall ever take up orthodontia as a specialty. I may in time work into it. As Dr. Federspiel said, "We are coming to an age of specialists." We have the orthodontist, the pyorrhoea specialist and after a while a man may claim to be a specialist if he is not able to do anything else except put in an amalgam filling. The trouble is, we do not know where to draw the line. I came down to take Dr. Dewey's course and while I do not go back as an orthodontist, I go back to my community better equipped to perform service to my patients than is possible for me to do otherwise.

Dr. Dewey: Taking up the question of orthodontia in small communities you are very likely to stop on the phase of the question, whether a man should specialize or not specialize. Now, there is no doubt but that there is a great deal of orthodontic work to be done in small communities and a great deal of malocclusion to be treated and those people to a certain extent are entitled to some consideration. Somebody will have to do that work, because those people cannot all go to the city. This work cannot all be relegated to the large centers of population, and it will eventually work out that the man who is equipped to do this work will find it gravitating to him, Some speak of the fact that if you are doing general dentistry, the dental profession will not send you orthodontic cases. That is unfortunately true. But in a little while, if you get a few good results in a small community, everybody will know about them. They begin to talk about them in the sewing circles and the club meetings. They will know you are the man who is doing that work and that will lead people to seeking you out if you can deliver the goods, whether you are specializing or not. Of course, the greatest trouble is the conflict that lies between the treatment of malocclusion and the general practice. If we could get orthodontic cases in the morning or early in the day, we would be much more able to take care of them than if we try to treat orthodontic cases after six hours' work of general dentistry, for then we are in no condition to handle them. We are tired out, and if an appliance is broken, we are apt to say, "I will fix that tomorrow". If you are in general practice, you may have to take certain days of the week to do that adjusting; or you can take a Saturday morning when you are not too tired; and then probably you may take Saturdays and Wednesdays, and the first thing you know, you are devoting three or four days of the week to that work, and will probably drop everything else, if you have succeeded in doing your work well.

There have been a great many discussions in the medical profession about the six weeks' and eight weeks' specialist, and a great deal of criticism has been placed upon those people, and with justice, because it has been the case time and again that men have gone

to Europe and were supposed to be taking a special course, but who never have been near a hospital unless they walked through one door and were kicked out of the other. But in a special course in orthodontia of eight weeks, if you work conscientiously and the course is given in a conscientious way, you will get the fundamental principles of the science, which will afterwards develop by use. You cannot become skilled in any one thing in eight weeks. If you did, you probably would become tired of it. Anything worth while requires real effort to attain, and the harder it is to attain the more you are going to appreciate it. In the practice of orthodontia, there are complications which arise in practically all conditions. No two cases are exactly alike. But in the preparation and making of a gold inlay, you get in the habit of preparing cavities alike, following the same technique. You cannot do that in orthodontia. There are certain lines of treatment for certain malocclusions and even with those typical cases you have to be watching all the time for something which may arise in the future that you have not been able to apprehend. That is another reason why it is quite impossible for an orthodontist to put an appliance on a case for another man and expect the other to treat the case to the end. You may put on the appliance right, but you have no assurance it will go right; there are questions coming up constantly that must be mastered. Someone in a small community of 20,000 or 30,000 people is going to treat malocclusions and it is going to be the man who has the best training. It may take a little while to get the people talking about him and to know that he can do that work, but after he has established a reputation, he will find he can get the business.

You have heard a great deal about not getting good fees in small communities. But you will find even in small communities people can afford to pay $200 or $300 for an operation. A lot of people pay $250 or $300 for a piano and more than that for automobiles, and it is simply a matter of getting them to want their malocclusions treated as bad as they want automobiles and they will pay the price. Get them educated to want the service. If you can render them the service, you can get them to pay for it. As Dr. Benton says, "It comes back to a question of salesmanship." If you can show satisfactory results and get the people to realize that the work is worth something, and it is something they need, they will pay for it, because people that can have pianos and automobiles, even if comparatively poor, can pay a good and liberal price for orthodontic treatment. To a certain extent it lies with the orthodontists themselves to educate the public and make them realize that they are doing something of value to the patient, and they will be willing to pay for it.

Dr. McCarter: I do not know that I have anything more to say. I think Dr. Dewey answered most of the objections that were brought out. All those points that Dr. Dewey and Dr. Federspiel have suggested are points that we meet and difficulties that we have to overcome, but I think they have been pretty well covered.

Just one point about the matter of fees. It is a matter of education. Just as soon as a dentist begins to realize there is a bigger field than the mere filling and extracting of teeth and that there is a great deal more to orthodontia than he has ever considered before, and to co-operate with a specialist somewhere, then the work is going to be easier. As Dr. Federspiel says, it is simply a matter of being able to deliver the goods. I do not believe that any one person is competent to follow all lines successfully. Some of us can do one thing and some another. If a man chooses a line and follows that, and makes a success of it, he is going to be found out sooner or later.

THE DELAYED ERUPTION OF AN UPPER CENTRAL INCISOR.

By Martin Dewey, M. D., D. D. S., Kansas City, Mo.

IN presenting this case to the readers of this journal, I do so because of some of the features connected with the case and not because of the difficulty of treatment, or because of the new appliances used.

When I first saw the patient, a young man 19 years old, the right upper central incisor was erupting on the labial side of the alveolar ridge, gingivally to a temporary bridge which he was wearing to supply the missing central. The cutting edge of the tooth was all that could be seen. By grinding away the gingival portion of the incisor facing, it was possible to allow the central to erupt to the position shown in Fig. 1, before removing the bridge.

At the time the impression was taken, a piece of band material was carefully worked under the lingual side of the tooth and soldered on the labial side. A small tube was also soldered on the labial side of the band for the purpose of attaching a ligature, to pull the tooth occlusally.

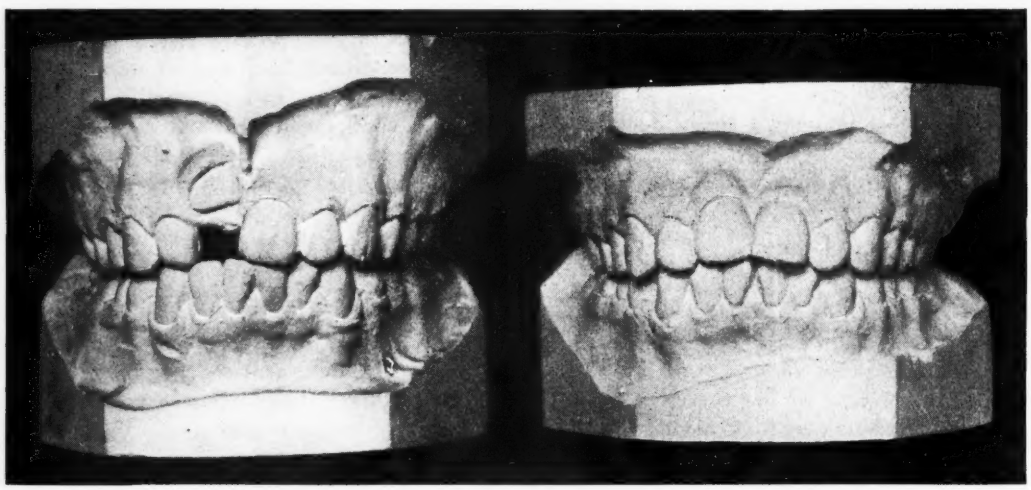


Fig. 1.

Fig. 2.

Clamp molar bands were placed on the first upper molars and a sixteen-gauge alignment wire was used. The regular expansion arch with the threaded ends was used in this case. Very little expansive force was placed in the alignment wire, as there was almost enough room for the left central.

The alignment wire occupied a position about even with the gingival border of the normal teeth. The normal incisors and canines were ligated to the appliance in order to support the anterior portion of the alignment wire.

A wire ligature was passed through the tube on the band which had been placed on the left central and twisted around the arch. About eight months' time was consumed in moving the central to the position shown in

Fig. 2. A retaining appliance was made by soldering a labial wire on the left central band and the ends of the wire bent occlusally to engage the cutting edge on the left central and right lateral. Care must be taken that these wires do not interfere with the occlusion of the lower teeth.

There was nothing especially difficult about this case. No X-ray was made. I do not know the cause for the late eruption of the left central. There was plenty of room for the tooth to make its appearance, in fact very little expansion was needed to get the tooth in the dental arch.

In a great many cases similar to this, the question has been asked: Will the gingival portion of the gum follow the crown of the tooth? In fact, this patient had been told the crown of the tooth would be long if the tooth was forcibly erupted. It required considerable argument to induce the gentleman to have the tooth brought down to its proper position instead of having it extracted and an artificial tooth inserted.

The result, while not quite normal (there is a slight bunching in the lower teeth which the patient would not have corrected), is better than an artificial substitute would be. The "gum line" is normal.

CURRENT ORTHODONTIC LITERATURE

EDITED BY H. C. POLLOCK, D.D.S.

About the "Message to Parents of School Children."

Those who are engaged in the practice of orthodontia marvel at the lack of information manifest in this activity by professional men and the public who have never had occasion to give this subject thought and study. Upon more mature consideration, however, we do not know that physicians, collectively, have ever had their attention called to the results of orthodontic procedure. The laymen have been limited in obtaining information to personal contact with those who are possessed of this knowledge and who are in a position to know.

Tremendous advance is being made in the correction of malocclusion of the teeth and its allied maladies. What proportion of the laymen have any conception of its far-reaching effects and possibilities? How many physicians who have the physical welfare of the nation in their hands have any knowledge of what has been accomplished, with the possible exception of a very meager subconscious conviction that it is possible to straighten teeth? Then, further, we realize the diagnostic principles being overlooked by many dentists whose opportunity it is to first observe the development of the teeth and jaws. It is safe to assume that less is known today by laymen concerning the science of orthodontia than any other specialty. It is obvious, too, that it is not altogether clear that dentistry is one of the many medical specialties. It is further apparent that orthodontia as a department of dentistry, or in whatever channel it is seen fit to be classed, is in obscurity, indeed insofar as it is mingled in the general fund of information possessed by laymen.

The press, as a rule, so distorts and misrepresents the findings of scientific men on physical problems, that those who have a right to form an opinion upon these subjects are diffident to express their views, where there is any possibility of newspaper publicity or of quotation which may not be verbatim. It is a very hard problem for newspapers or magazines to quote in the language in which it is desired to be quoted; their chief aim, when concerned with a surgical subject or any one of a physical nature, is to make a sensational story mingled with bits of satire and humor to make the story spicy for their readers. As a result, too often professional men when prevailed upon to furnish the desired information are made to appear ridiculous in the eyes of their contemporaries—their professional brethren.

The American Medical Association, being quite well aware of this situation but at the same time cognizant of the fact that the greatest service possible to render society is the spreading of the gospel of health and prevention of disease, has been for several years past conducting public meetings in cities where lectures are given by prominent members of the medical profession upon subjects pertaining to health conservation. Surgeons are

taking an active interest in educating laymen upon the cancer problem—its etiology, the possibilities of surgical relief in the early stages, and the importance of the early recognition and diagnosis of the cancer. It seems this is the only salvation of mastering the problem.

It was only a few short years ago that oral hygiene was in obscurity. In the public mind it was almost unheard of, but we cannot help but note the world-wide attention it is attracting today and the infinite amount of good which is being done for adults as well as for children. Among the most important benefits, too, in this propoganda, as we see it, is the attitude the public is assuming toward the dental profession, giving this profession credit for a place in its proper sphere in health conservation. This, then, is all a result of concerted action in an educational campaign teaching individuals the importance of the proper measures to be employed in the care of the mouth, the entrance to the alimentary tract. It seems as though dentistry, since this campaign has been in progress, is rapidly coming into ts own with greater strides than ever before, and more and better service is being demanded in direct proportion to the amount of educational work being done. And has this latter not been true in the history of every branch of medical science?

"A Message to the Parents of School Children" is the title of a very neat and concise booklet presented by the Dental Committee of the Bridgeport Board of Health. This should be a very effective means of establishing a clear understanding of what the Dental Committee working under the Board of Health is trying to accomplish in the public schools of Bridgeport. From this "Message to Parents" we take pleasure of quoting the following:

"The mouth is the gateway to the system. If the mouth contains decayed teeth and decomposed food, all of the fresh food taken at each meal becomes infected by the thousands of germs in these unclean mouths which are swept into the stomach and intestines and cause, eventually, a systemic (bodily) poisoning that may produce constipation, headache, dizziness, languid feeling, trouble with the eyesight, fevers, susceptibility to colds and many other of the small illnesses of child life.

"But these ailments are only a small part of the real serious dangers arising from decayed teeth and unclean mouths. Many of these decayed teeth produce abcesses and the pus swallowed daily will eventually so poison the child's system that anæmia is frequently produced. Anæmia is a lessening of the red blood cells and the child becomes pale in color and weakened physically.

"You can readily understand that if the reservoir of the city should become filthy or infected with typhoid germs, how in a short time the whole population would be affected by an epidemic of sickness. And so it is with our bodies. No matter how pure the food we eat is, if it passes through an unclean mouth it becomes laden with the germs that thrive in such mouths. If we have sound teeth and clean mouths then the food will reach our stomachs in a clean state and can properly nourish our bodies.

"Would you not like to protect your child from the serious diseases of early life such as scarlet fever, diphtheria, mumps, measles, whooping cough, tonsillitis, etc.? Let us quote to you what has been done in one institution alone in the elimination of children's diseases.

"In the St. Vincent's Orphan Asylum, Camden Street, Boston, Mass.,

there are close to three hundred and fifty children. In the year 1910 the matron became convinced that the bad condition of the children's mouths had much to do with their sickness. A room was furnished with a dental chair and equipment and Dr. F. A. Keyes, of Boston, was employed to put the children's mouths in a sound, sanitary condition.

"Again we would call your attention to the dangers of improper brain development in children when the first teeth are badly decayed and the child cannot properly chew its food. We have a set of muscles that open the lower jaw and a set that closes it. These are known as the muscles of mastication. The muscles that close the jaw are very powerful and capable of exerting a great pressure between the teeth when they are closed. Close your teeth together and bite hard and you can feel with your fingers how the muscles swell out on the side of your head.

"Dr Lawrence W. Baker of Boston has demonstrated upon animals what effect this lack of power to properly chew food has upon the skull and also upon the brain. Taking a litter of four rabbits, he ground down the teeth on the lower jaw on the right side of two of them so that they could chew only on the left side. The four rabbits were then fed the same food, living together under the same conditions, the only difference being the inability of the two rabbits to chew their food on the right side. At the end of seven months the rabbits were chloroformed and the skulls prepared for examination.*

"In presenting this demonstration we wish to call attention to the fact that it is extremely important to keep the baby teeth in a sound and healthful condition so that the child can chew on both sides of the mouth. Unequal brain development means an abnormal brain and an abnormal brain means abnormal thought and actions. A physically perfect child is pretty apt to be normal in every way.

"During the first round of work in the public schools we cleaned and polished the teeth of 4,666 children. This number includes all the children of the first grade and 840 of the second grade. In the mouths of these children we found 25,524 cavities in the baby teeth. On account of decayed or sore teeth many of the children could chew on but one side of the mouth, while some of them had no teeth left in the back of the mouth as they were decayed down to the gums.

"Patents can greatly aid us by encouraging the children to brush their teeth after every meal, by insisting that they thoroughly chew their food and by seeing that they are kept supplied with clean and serviceable tooth brushes.

"The Dental Committee believes that it is much more sensible to prevent teeth from decaying than to establish a clinic for just the filling of teeth. We know that 'A Clean Tooth Never Decays.' If the children's teeth can be cleaned and polished at frequent intervals and they are taught how to brush the teeth and the parents will see that they do brush them after each meal, we can prevent in a great measure any cavities from forming in the second teeth. We are trying to help the children to learn to help themselves.

"Parents may rest assured that the utmost precautions are taken that

*A series of illustrations and descriptious of each are shown, demonstrating the results of Dr. Baker's experiments.

everything done for the children is conducted in a sanitary manner. We know of no dental offices where greater attention is given to sterilization than is given in this work in the schools. The hands of the operators are washed thoroughly after working for each child. The paper covers on the top of the cabinets are changed each time so that polishers being used and laid on the cabinet may not leave infection. Oilcloth covers for the chairs and bibs are washed each time, and with sterilizing agents for the polishers, mouth mirrors, etc., the work as conducted is cleanliness itself. Each operator has two complete sets of instruments."

ON THE WRITING OF SCIENTIFIC ESSAYS.

IT MAY be a truism to say the true artist is born not made, yet no one attains to eminence in any branch of art who does not take pains to make himself efficient in the technique of his subject. The painter and the musician must spend years of study in learning the rules which guide their art, and in attaining skill in the manipulation of their tools, before they can give satisfactory expression to their inspirations. The essayist's art does not differ in this principle from any other form of artistic expression, and the writer also must devote much study to his art before he can attain success. The ability to use words, phrases, and sentences so as to correctly convey an intended meaning is acquired only by much labor.

History teaches us that many of the masters of English prose took infinite pains to acquire that elegance of expression and beauty of style which make their writings appear so facile and spontaneous; and that this perfection was only obtained by great industry in frequent writing and re-writing of even single sentences. The art of essay writing does not depend only on the form of the sentence. The general arrangement of the subject matter, so that the sequence of ideas should follow the logical evolution of the argument, is at least of equal importance.

These remarks are suggested by the deplorable condition in which many papers are sent to the scientific press, which leads one to suppose that the authors do not realize that any trouble need be taken in their composition. The careful and conscientious labor spent in making the observations and the record of the facts frequently contrasts oddly with the careless and slovenly manner in which the paper is written. Times without number a potentially useful contribution to scientific literature is rendered practically valueless because the author has not taken the trouble to expend the necessary energy in recording his facts and opinions in an unambiguous and an intelligible form. We take this opportunity of pointing out another common error in scientific writing—namely, the failure to record all the data on which the conclusions are based.

We cannot expect that the scientific writer will be able to emulate the great essayists of our language, nor that the average medical writer will rival in style and finish the best examples from the pen of members of our own profession. Although it would be unreasonable to demand a high de-

gree of literary skill from men whose daily work occupies so much of their time, and whose student days were so filled by scientific studies that little leisure was available in which they could acquire proficiency in the art, it is, nevertheless, this very lack of familiarity which should lead them to take increased pains with their writings. When an able and experienced writer, such as Sir Clifford Allbutt states, "I usually make four drafts at least before the manuscript is ready for the printer," how many revisions ought most of us to make before we ask our prospective readers to honor us with their attention.

The busy practitioner may be tempted to reply, "But I really cannot spare the time to take so much trouble over the form in which I shall express my views." The retort is obvious. If it were worth while to spend time and labor on collecting the material for the paper, it is surely worth while to record it in a form in which the reader is enabled to appreciate clearly the value of the investigation, and in which he will not be liable to misconstrue the meaning. Further, the carelessly written article inevitably raises in the readers' mind a feeling of distrust, and the fear that a similar want of care may characterize the work itself. No author, however careful he may be as an observer, or however logical may be his reasoning, will obtain or merit due recognition for his work unless he display the same virtues in the composition of his paper. In this connection we cannot refrain from again quoting from the writings of Sir Clifford Allbutt. In an instructive publication, "Notes on the Composition of Scientific Papers," which all young authors would do well to read, he remarks: "A friend asked me why his really good work is neglected. I know, but I cannot tell him. It is because he writes so ill that others, and often less able authors, who respect their reader, get the credit."

It has been remarked that the editor of a scientific journal ought himself to revise the English of an article which he accepts for publication. In the first place, it is often much more than the grammar of the sentence that requires revision; and in the second, the author would probably resent, and quite correctly, any interference with his work. It is impossible to alter any sentence without giving it some shade of meaning not present in the original, and thus the new version, although more correct, may not be a true representation of the author's meaning. An editor, however careful he may be, can never be certain that he has grasped the writer's meaning when the construction and the grammer of the sentence are faulty. Thus the full responsibility must rest with the author, for no editor has any right to interfere with a paper for which he does not assume any responsibility. If the tyro, or even the more practised writer, realising the inherent difficulties of the art, desires to help, let him send his manuscript to a friend on whose literary judgement he can rely, and request him to play the part of the candid critic. The humiliation which will probably follow its return, if this critic has maintained the reputation of a true friend, will be amply compensated for by the increased value which the paper will attain.—From *The Med. Journ. of South Africa.*

EXCERPTS

Deformity of Teeth Due to Syphilis.—This interesting subject is discussed by W. C. Hollopeter, A. M., M. D., in the April issue of *Pediatrics*, in a paper entitled "Syphilis in Children."

Sir Jonathan Hutchinson has the honor of first describing that characteristic deformity of the teeth due to syphilis. He limits this to an expression in the second set of teeth. The first set may not give any evidence of the disease. Hutchinson's teeth stand for faulty development, they may be notched, peg or screwdriver-shaped. Usually the deformity is limited to the upper incisors and they are frequently separated from their fellows. I have long been observing the teeth of young children, especially those institutionally reared, and have noticed the havoc accomplished by artificial food. It is evident that the teeth share in the general demoralization of the whole digestive tube, and we find all forms of dental decay in the first, as well as in the second dentition. The law that Hutchinson enunciated would seem to have some exceptions. To illustrate by an example in private practice:

Mrs. S. came to me in 1910 with her sister's child, six months old, and gave me the following history: The sister was forty-one when she died, her first child was born in 1908; stillborn, about seven months; the skin over the whole body was macerated. The second child, 1909, was born alive and lived two weeks; had eruptions or "blisters" all over its body. The third child was born in 1910, and weighed four pounds. The mother died of puerperal septicemia and the living four-pound child was given to the sister who cared for it artificially under my care. .

The child had an uneventful career during its four years of existence, no eruptive or infectious diseases. The foster mother was unusually careful in all details by reason of the parental history.

Handicapped as we were with a questionable history, our effort was to prevent as far as possible any expression of the usual troubles of bottle-fed children. We had but slight evidences of rickets, dentition was slow, the first tooth coming at nine months. When the child was two years old she had ten teeth, four upper and six lower ones. The teeth soon blackened after they were well erupted. The teeth were, in addition to the discoloration, peg-shaped and notched and far separated from each other. The child died suddenly this summer in a convulsion, the third she had had within the last eighteen months. I have no doubt the child would have given a positive Wassermann reaction had I been allowed to make one. The only evidence we had in this case was the family history and the character of the first upper teeth.

Still, of London, cites a typical history of the syphilitic manifestation of Hutchinson teeth in the following note: "A male infant, aged fourteen months, was brought to the Hospital for Sick Children, Great Ormond Street, for screaming and colic. His upper central incisors were both of the typical screwdriver shape, narrower on the margin than at the base, and showed at the cutting edge a well-marked shallow crescentic notch, and in addition evidenced that undue separation from one another which is so common in syphilitic teeth."

I do not think that a more characteristic specimen of syphilitic teeth could well be found, for while there was no other evidence of active syphilis in the child, still the following family history was strongly suggestive of luetic taint. Of four pregnancies the first child was stillborn at six months; the second, a premature eight-months' child, which lived nine weeks; the third, a seven months' child born deaf and dumb; and the fourth, the patient above mentioned. Smali and Colyer, in their treatise on "Diseases and Injury of the Teeth," refer to a case recorded by Oakly Coles of peg-shaped teeth in a temporary set which were very characteristic, occurring in a child the mother of whom had long been subject to syphilis. However, referring to the central notch which is seen in the upper central incisors in the permanent teeth in congenital syphilis the same writers point out that it must not be solely relied upon in diagnosis, as it appears it be produced from

other causes in the teeth when there is not the slightest taint of congenital lues.

So deeply interested have I become in the manifestation of congenital syphilis in the teeth of children that I have written to a large number of pediatricians throughout the United States as to their views on the subject. They seemed to be uncertain as to the various expressions of deformity in children's teeth, i. e., peg-shaped, separation and notched. Yet the majority were quite convinced that the so-called "Hutchinson teeth" might include both sets. Abt has written up the various abnormalities of the first set of teeth occuring in rachitic children, namely, late eruption, early decay, black and eroded teeth, all of which seem to follow malnutrition and its consequent evils, but no reference is made to syphilitic teeth. This seems to be the common belief and teaching of most of us. It is reasonably certain, however, that the many dental deformities occurring in malnutrition and rachitis have been very confusing to the physican, as he has not recognized the peg-shaped teeth or the marked separation between the teeth simply because they have erupted slowly, or were not erupted at the time the mouth was examined. Hereditary syphilis in children renders them anemic, small of stature and too poorly developed in other ways that the unfavorable conditions thus thrown around them so delays the eruption of the teeth, that we are often inclined to neglect making a discriminating diagnosis between rachitis and inherited syphilis. Another thought is this: Children with a positive Wassermann reaction between two and three years of age frequently show complete decay of all the upper incisors, thus causing us to think of rachitic destruction of the teeth, which most likely is the true factor, yet the peg shape and the space between the teeth, the true expression of hereditary syphilis, may fail of recognition.

The Relationship Between the Size of the Teeth and the Size of the Jaws.—Norman G. Bennett, in his paper read before the British Society for the Study of Orthodontics, December, 1914. (*Dental Record*) points out that in many cases the jaws are too small for the teeth, which he says may be due to three distinct causes, as follows:

1. Regressive inherited changes in the jaws, proceeding more quickly than in the teeth.

2. Inheritance of the jaws from one parent and the teeth from the other, producing a "misfit."

3. Defective growth of the jaw as the result of disuse or environment subsequent to calcification of the tooth germs.

It will perhaps be of interest briefly to discuss these three causes. By some writers the *first* has been discredited as involving the idea of inheritance of acquired characters—of influences affecting the "soma." I think that such a conclusion is unwarranted. It should be remembered that not only is the original production of an organ often dependent upon natural selection based on mutation or variation, but that the *maintenance* of the organ is similarly dependent. Its existence through many generations does not provide it with any innate power of permanence in its most perfect form. Weismann writes, "The fact, however, that we deny the transmission of the effects is of no importance; and I have already attempted to show in former essays that both use and disuse may lead indirectly to variations—the latter in all cases in which an organ is no longer of any importance in the preservation of the species, and in which, so far as the disused organ is concerned, 'panmixia' occurs—in my former essays sufficient proof is given to show that the gradual degeneration of organs which are no longer of use does not require the assumption of the transmission of somatogenic variations." Again, "the transformation of a species, as well as the preservation of its constancy is based upon natural selection, and this is constantly at work, never ceasing for a moment." "Every species is under the uninterrupted control of natural selection, as is clearly shown by the degeneration of parts which have been useless."

Weismann goes on to cite as examples the Kiwi, a New Zealand bird with rudimentary wings, which has gradually adopted the habit of living on the ground among the short undergrowth; the acquired blindness of crustaceans living in caves, and of deep-sea organisms; and the loss of protective coloring in domestic animals.

Now I do not wish to argue that even the jaws of modern civilized man are useless, but undoubtedly they are of less importance to him than they were to primitive man. It is worth noting that not only are the jaws subject to the damaging

effect of external influence during life, but also the third molar, which calcifies late. Such effects, being "somatic," are probably not inheritable, but nevertheless may form the cover, as it were, of gradually accumulating blastogenic variations of a regressive kind. There is a struggle for existence among organs, as well as individuals, and those that are of most importance survive.

The great variability of the bones and other parts of the face is obvious to any one—in fact so obvious is it that it seems to be consistently ignored in considering these problems. Is it not a fact that among all living species the greatest variability is to be found in the human face (especially of the modern mixed races), and perhaps the greatest of all in the maxilla and mandible?

Inasmuch as the function of the jaws is chiefly to carry the teeth, it is a little difficult to understand why the jaws should regress more quickly, but it is an apparent fact that they do, and having no explanation to offer is no reason why we should ignore its obviousness.

I believe that this is one of the causes of so-called "crowded" mouths. It is, of course, distinct from what is called "reversion" produced by crossing of races, which might be expected to produce larger jaws rather than smaller.

The *second* explanation of inheritance of the jaws from one parent and the teeth from the other has been the object of much unmerited obloquy.

In the first place it should be understood that by parent is meant the whole ancestral inheritance on that side. What is called "particulate" inheritance is well recognized. It is usually affects symmetrical organs equally, but not always, as has been shown by certain examples of eye-color. I will venture to quote from Weismann again:—"A child may closely resemble its mother as regards the arms and hands, and nevertheless may take after its father in respect of the legs and feet. The form of the skull may resemble that of the father and the face that of the mother; or the form of the entire head and face may be like the mother, while the eyes may be similar to the father's in every detail. The son may, like his father, possess a dimple on the chin, although he takes much more closely after his mother as regards the shape of the face and nose. That the combination of parental characteristics may even extend unto far greater details is shown especially by the remarkable amalgamation of the mental qualities of the parents which often occur. The intellect and parental talent may be inherited from the mother, and strength of will and unselfishness from the father; and all these qualities may be contained in one skull, the form of which essentially resembles that of *one* of the parents only."

It is clear, I think, that there is no *a priori* reason why small teeth should not be found in large jaws, as well as large teeth in small jaws, and indeed it does occur, though nothing like so frequently. One would expect that the close correlation between the teeth and the jaws would have overcome the tendency to disproportion whether as the result of retrogression or "particulate" inheritance, but after all the jaws are not solely tooth-bearing organs.

I do not think that this second cause is adequate to explain more than a small proportion of "crowded" mouths.

The question of diminished function as the cause of lack of development has been so much discussed within recent years that I do not propose to go into it fully. But I subscribe to the view that the growth of any part of the body is dependent on general nutrition, and also to a large extent on local function—function stimulates growth. The lower races living in a semi-wild state, who use their teeth, for the most part have well-developed jaws. I am aware of course that this may be explained as a racial characteristic on the grounds previously discussed. Paralysis or joint disease in infancy will cause diminished growth of the mandible or the long bones; here, again, I realize that some of these cases may be explained by involvement of the epiphysis or other centres from which ossification proceeds, but such explanations are not to my mind sufficient; moreover, certain experiments on animals have shown similar results.

I believe that use is an important factor in jaw development.

Indeed, it will appear that I venture to uphold all three of the explanations put forward to explain the prevalent want of correlation in size between the teeth and the jaws, which places me, I am glad to say, in the happy position of being able to agree with every one.

A Replanted Tooth Lasting Sixteen Years.—C. Lotinga, L. D. S., in *Dental Record* (London), issue of February, 1915, reports the sequel to a case relating to a tooth of his own which appeared in that journal dated April, 1904. The tooth had been replanted six years previous to that and the history was briefly as follows. An abscessed upper lateral, which had given him a great amount of trouble and would not respond to any form of treatment (which included one of his tormentors breaking a Glidden drill up the root) was finally extracted. Previous to this a splint was stuck up to fit the tooth and its two neighbors. The crown, which was badly discolored, was excised and a Richmond crown fitted, the broken drill was removed and the apex plugged with a Dal's porcelain inlay. The root was found badly exostosed (with the candle-dripping variety) and this was removed, leaving absolutely no periosteum whatever, practically making the root a foreign body. It was replanted the same day, having been out of his mouth six hours. After six weeks it was perfectly firm and remained so until a month ago. On the sixteenth anniversary of the operation, to the very day, he unfortunately caught it on a hard piece of toast, which fractured the root, and he thus had to lose it, but had no doubt that, barring the sad accident, it would have done him yeomen service for many years to come. He was taught that a replanted tooth lasted five or six years, providing the periosteum was retained.

The Case Against the Tonsil.—In an editorial in the *New York Medical Journal* attention is called to the profound influence upon general health which may be exerted by diseased tonsils. The writer declares that attention was first directed to this influence by the study of the relationship of enlarged tonsils to the etiology of tuberculosis in children. In recent years this gland has been found responsible for the development of arthritis—even of arthritis deformans—and other serious diseases have been laid at its door.

The latest contribution to the case against the tonsil is the discovery, by Smith, Middleton and Barrett, that the tonsillar crypts may harbor the *Entamoeba buccalis*, the organism which is now known to be the cause of pyorrhea. Pyorrhea is also known to be an important factor in causing various forms of arthritis. The inference is, therefore, natural and reasonable that back of both the enlarged tonsil and the diseased gingival tissue is this animal organism; that the destruction of the ameba will cure the local disease, and at the same time prevent or possibly cure the remoter one.

Fortunately we have a specific amebicide in emetine, the alkaloid of ipecac. It has been found curative in pyorrhea, and now it is likely to be given a trial for some of the resistant cases of tonsillitis for which the knife, snare or tonsillotome is generally thought to be the only remedy. Already this remedy has been used in cases of arthritis, and with results that give promise of wider employment. In two cases reported by Smith, Middleton and Barrett in the Journal of the American Medical Association—advanced cases with considerable deformity, accompanied by frequent acute attacks which were uninfluenced by the salicylates—relief quickly followed the hypodermic administration of the emetine.

Others are bound to follow up this lead. Nothing may come of it; yet we have the feeling that happy results will follow—not "cures" in every case, or even in the majority of cases—but relief in a certain percentage in which formerly little could have been expected from medicinal treatment.

The Thinning Ranks of the Pioneers.—Each year carries off some of the old time stalwarts of the profession leaving the gaps to be filled by younger men. As we look back over the last few years we are impressed with the large number of men who have passed away—men most prominent in the profession a decade ago. Taken at random as they occur to us, and making no pretence of including a tenth of them, we recall at least half a score who were men of outstanding interest in their day, but who are now numbered with the departed.

There was Norman W. Kingsley, the versatile genius, who was as great a writer as he was a dentist, and who was a greater artist than either. His excursions into sculpture brought to dentistry a recognition from the outside world which it had not before enjoyed, and he did more to stimulate an atmosphere of art in our calling than any man of his day and generation.

In dental societies he was a brilliant speaker, and he left an impression on the profession not soon to be forgotten. Of W. D. Miller what shall be said? Little that has not already been said much better than we can say it. Suffice it to note that Miller's name is more frequently used in our scientific literature today than that of any man of the past, and he is looked upon as an authority on any subject which he investigated. His untimely death was a loss to the profession more serious than that incurred in the passing of any man of modern times. This because of the fact that he had plans laid to inaugurate a line of scientific work which was to supplement and crown his previous splendid achievements. It is fitting that Miller's name is being commemorated so signally by the profession. Linked closely with the name of Miller, both in tastes and personal friendship, was that of W. C. Barrett, the intellectual giant whose brain encompassed more than the field of dentistry, and whose brilliant pen was constantly wielded for the uplift of the profession, and the cultivation of general literature, music and art. Barrett was a widely read man and a power for good not only in the councils of the profession and as an organizer and teacher in dental colleges, but also as an editor of dental journals. It was in his journal *The Independent Practitioner* that Miller's famous articles on the etiology of dental caries first appeared.

The contingent from the South contained the names of many brilliant men, notably McKellops of St. Louis, the finished operator; Morgan, the elder, of Nashville—a man of rare and sterling character; Crawford, the impassioned orator; Turner of Raleigh, father of our own C. R. Turner, and a man of cultivated tastes and Southern charm.

Then there was Bonwill, the inventive genius, whose active brain encompassed more of the problems of our profession than most men realized in his lifetime, and who left as a legacy many real advances of benefit to human kind. Litch, the editor and author, was a man quiet in his demeanor, but scholarly, deep, and profound, and he did a real service in giving a status to the dental thought of his day. Then comes the best beloved of all, the sweet, the serene, the charitable, the charming S. G. Perry. Never in our ranks was there a more pleasing personality than his, and he left wherever he went a precious savor of geniality and comradery. Perry's name is always spoken with loving kindness because of the memory of many gracious acts and much good cheer which he spread abundantly while living. A. W. Harlan was another man who a decade ago was most active in the profession. He was a man of rare mental capacity with an astonishing grasp of matters professional, and a most retentive memory for facts and figures. To him dental journalism in the middle West owes much, from the fact that he established and piloted to success the *Dental Review*, which under his guiding hand attained to a prominent position in our periodical literature.

A score of men might be mentioned in this section, among them Cushing, Allport, and Dean; but coming down to more recent times we have Crouse, the man who labored harder and longer for the protection of the professions's rights than any man before or since, and whose work will be appreciated more as time goes on.

The recent deaths in the profession ininclude the names of James Truman, a commanding figure in dentistry for nearly half a century; C. R. Butler, a rare and modest gentleman, and distinguished operator; and Louis Jack, a prolific and polished writer, and a practitioner of distinction and renown.

These men are gone, and others of their kind. The question is how are the ranks being filled? It would be pessimism to admit that they are not being well filled. The profession must go on and good men must be developed to take the places of those who have passed. But the debt to the pioneers must never be forgotten, and it is well to hark back at times and view with due appreciation what the fathers have done for us. We fear that the younger men of the profession do not sufficiently realize their indebtedness to the men who have gone before. As the distinguished editor of the *Dental Cosmos* has remarked in an editorial on a kindred topic: "We accept the legacy and forget the benefactor."

The incessant activities of the present do not give us much opportunity to indulge in retrospect, and yet we cannot afford to miss the valuable stimulus afforded by the example set by some of the heroic and classic souls who have had to do with the formation of our professional ideals.

All honor to the pioneers, and a benediction on their memory.—*Editorial by C. N. Johnson, M. A., L. D. S., D. D. S., The Dental Review.*

A Problem in Anchorage.—Lawrence W. Baker, D. M. D., Boston, Mass., in a paper presented before the Eastern Association of the Graduates of the Angle School of Orthodontia (*Dental Cosmos*, March, 1915) says in part:

The overcoming of the difficulty of keeping molar teeth from tipping when moved distally is accomplished by the use of a swivel tube on the molars, and the use of Angle's new tube and pin appliance, employing the ten anterior teeth as anchorages.

This swivel-tube principle may be advantageously used in the treatment of cases of excessive infra-occlusion.

Every orthodontist has undoubtedly met with two groups of cases in which it is necessary to gain space in the dental arches by moving the molar anchorage distally. The first group consists of cases in which room has to be gained for impacted premolars or canines. The second group is made up of mutilated cases where the remaining molars have migrated forward, and it is necessary to move one or both molar anchorages distally to gain space in order to supply the missing units of the dental arch.

All will agree that with the expansion arch and its usual form of anchorage (band and rigid buccal tube) this is a most difficult condition to bring about, for the molar anchorage is most apt to overbalance the resistance of the anterior teeth, and the space is gained at the expense of moving these anterior teeth forward instead of carrying the molar anchorage backward. The result of this mechanical disadvantage is that the osteoblasts are stimulated to activity in the wrong area, and the consequent bone growth takes place in the anterior region, and the facial lines are usually distorted according to the amount of space gained.

Doctor Baker showed a mutilated case of Class I in which both the lower first permanent molars were extracted, and in which the second permanent molars migrated forward and partially filled the space of the missing units. In doing this these second molars tipped forward, as is usually the case when the first permanent molars, the foundation stones of the dental structure, are sacrificed. All modern orthodontists realize the importance of putting these second molars into their normal position and bridging the spaces of the sacrificed first permanent molars.

Realizing the difficulty of tipping and carrying back these anchor teeth with the stationary molar anchorage, by substituting the rigid buccal tube with a swivel-tube, the problem is simplified; so Dr. Baker proceeded to have constructed anchor bands for the lower arch with these swiveled tubes.

Even with this simple anchorage and the expansion arch, he found after bringing the misplaced canines and the incisors into line, that the resistance of these anterior teeth had weakened, and it was impossible to use them further for the purpose of carrying the molars backward, although this had been accomplished to a very appreciable degree. So without hesitation the New Angle Appliance principle was employed, continuing, of course, with the swivel-tubes.

Dr. Baker says he also used the same principle with the "new appliance" in several cases of impacted premolars and canines with the greatest satisfaction.

Dr. Baker adds still one more important use for this swivel-tube principle, and that is in the treatment of excessive cases of infra-occlusion. It is our common experience, he believes, in treating these cases with the ordinary fixed molar anchorage to bring about a tipping of the molar anchorage; it matters little whether the case be treated with the expansion arch and rigid buccal tube or with the "new appliance" and rigid buccal tube, or with the Young lock; in each instance it is a mechanical impossibility to treat these excessive infra-occlusion cases without causing this aggravating tipping of the anchor molars. To those who have experienced this annoyance he strongly recommends this pivoted anchorage—for with it the prizing leverage on the anchorage is relieved, and the perpendicular elastics have perfect freedom of action.

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EDITORIALS

Should the General Practitioner Receive Information on Orthodontia?

ONE of the problems constantly confronting those who have charge of the arranging of the programs for dental meetings is the amount of time that should be devoted to orthodontic subjects. Should papers on orthodontia and the correlated subjects be given? In other words, should an attempt be made to educate the general practitioner along orthodontic lines?

We find the profession divided upon this subject, and the division is found among men who are engaged in the practice of general dentistry and among orthodontists. There are some men in the dental profession who claim they are not interested in orthodontia, and it is a fact that at the meetings of some dental societies no time is allowed for the discussion of orthodontic subjects. The reason for this is that the officers of the societies desire to have papers presented on subjects of interest to the majority of their members. It has occurred several times in societies—local, state and national—that good papers on the subject of orthodontia have been read to small audiences, and for that reason some orthodontists object to giving papers before dental societies, and officers of dental societies object to having orthodontic papers on their programs. This is most unfortunate for all concerned.

We find, then, two unfortunate conditions existing; first, the general practitioner who has no desire for information in regard to orthodontia, and second, the orthodontist who believes that the general practitioner should not receive enlightenment on the subject. Both are wrong and are doing themselves, their profession and the public a great injustice. Unfortunately, both of these groups have arguments, and arguments with more or less logic to support the stand they have taken. However, the arguments which they advance to support their positions are not in keeping with the greatest good which may be rendered humanity.

We believe an egregious error is being made by state societies when they do not set aside some time during their meetings to the discussion of orthodontia and the correlated subjects. A mistake is being made by members of the dental profession who fail to avail themselves of modern orthodontic teaching; and an equally great mistake is being made by orthodontists who fail to spend part of their time in giving orthodontic instruction to their brethren in the dental profession as to the value of orthodontic information in all lines of dentistry.

There are three parties who will be benefited by the general practitioner receiving orthodontic information—the dentist, the patient, and the orthodontist.

The benefits of orthodontic information to the general practitioner are many. Modern orthodontia has progressed so rapidly that those who have not devoted at least a small amount of time in keeping up with the subject have missed many important developments in dentistry. Some of the things which are now accepted facts in the practice of dentistry have been largely the result of orthodontic teaching. We very much doubt if the occlusion of the teeth, the laws of occlusion as observed by many in the construction of crowns, bridges and dentures, would receive the consideration it now merits, if it had not been for the writings of orthodontists on the occlusion of the teeth. It is true that Angle did not "invent" occlusion, but his writings and teachings and the contributions of his students to the literature on the subject rendered great service to the dental profession. In later years, J. Lowe Young and others did much for the advancement of the science by calling attention to the anatomical forms of the teeth in the carving and making of inlays. We only mention these facts to show that the value of orthodontic information is not limited to orthodontic operations. Equally important to the general practitioner is the information which has been given on the evil effects of adenoids and mouth-breathing, the relation of malocclusion to the general health of the patient. There is probably no one thing which is as great a predisposing cause to dental caries as is malocclusion of the teeth. There is no one thing that has done so much to make good dental work impossible as has malocclusion. The dentist who wishes to do the greatest good for his patients should have all the information possible on this subject. Malocclusion is also the predisposing cause to many pathological conditions found in the oral cavity. In fact, it is now recognized as being impossible to treat some forms of pyorrhea without first correcting the malocclusion.

The general practitioner should be sufficiently versed in the study of orthodontia to enable him to make a correct diagnosis of a case of malocclus-

ion when it confronts him. He should recognize such conditions and be able to distinguish the difficult cases from those which are not difficult. He should be able to advise his patients in regard to the treatment of cases. He should know what cases to treat and what cases not to treat. We have seen the treatment of malocclusion begun by men who did not possess enough knowledge of the subject to realize what was required to establish normal occlusion of the teeth. With this state of affairs existing, it is indeed sad that many of our dental societies should try to exclude papers on orthodontia from their meetings, and even more so when members of the orthodontic fraternity refuse to present papers before such meetings.

The general practitioner should be able to recognize cases early and give proper advice in regard to their treatment, thereby rendering a great service to his patients. It is the man in general practice who first sees the malocclusions as they develop, and he is often called upon to advise patients as to what should be done. Oftentimes the plan of treatment followed out in a certain case or the fact that treatment was not begun at all, is very likely the result of advice given by the general practitioner. We often see cases in which the malocclusion is very marked, the teeth badly decayed, and great facial deformities existing among patients who should have been treated many years before. The reason given for not having had the case attended to in proper time is that the dentist did not advise treatment or that the patients were told to wait. Such conditions would not occur if the dental profession could be given more information on orthodontic subjects.

Another condition arising as a result of improper instruction to the patient, and which makes it very embarrassing to the orthodontist, is when the patient asks: Why did not my dentist tell me this before? It sometimes requires considerable tact to prevent the patient from losing faith in the dentist for not advising earlier treatment.

Since the majority of cases first come to the general practitioner for advice and treatment, it is his duty to educate the general public along the proper lines. Very few cases of malocclusion ever come to the specialist that are not first seen by the general practitioner of dentistry.

One of the most important points to be considered is the fact that the orthodontist himself derives great benefit through the education of the general practitioner along orthodontic lines. It has been observed that the majority of cases referred to the specialist are from practitioners who are most familiar with the subject, the benefits to be derived from the treatment of malocclusion, and who possess enough knowledge on orthodontia to diagnose and advise the patients properly.

Some orthodontist have long been mistaken in the belief that a plan formulated to spread orthodontic information among the members of the dental profession would result in every dentist treating the cases he found in his practice. The experience of many of our leading orthodontists has been just the reverse.

From a purely selfish standpoint, the greatest individual benefit that an orthodontist could derive would be to start a plan of educating the dentists in his community so that they would be able to recognize malocclusion, give the proper advice and even outline the proper treatment to the patient. If the dentist is familiar with the mechanical problems of orthodontics, he

will be less liable to attempt the treatment of cases which approach the impossible.

The greatest benefits to orthodontia as a science at the present time will be brought about by the education of the general practitioner along the lines above mentioned. The general practitioner will be benefited more than anyone else, as it will give him a better standing among his patients and fellow practitioners. —*M. D.*

The Inclined Plane.

IN this issue of the Journal appears the report of a number of interesting cases which Suggett of San Francisco treated with the use of the inclined plane. The principle of the inclined plane is well known in physics and mechanics and has been employed in regulating appliances for a long time. The disrepute into which the appliance has fallen is not so much the fault of the appliance as the manner in which it has been used. The construction of the appliance has also been faulty and some have overlooked the necessary requirements of the device. There is no doubt but that good results can be accomplished by its use if properly constructed and applied in suitable cases. It is by no means a universal appliance. The use of the inclined plane in connection with other appliances as shown in Figs. 9, 10 and 11 of Suggett's article, gives us an appliance and a force that would be hard to obtain with any other form of appliance. These cases of excessive overbite of the anterior teeth are quite hard to treat. Some have claimed that it is possible to depress the lower anterior teeth, which movement many authorities have always been doubtful of; but if the depression of the anterior teeth is ever desirable or possible it can in all probability be best accomplished by the inclined plane, and when the principle is used with the intermaxillary rubbers to elongate the molar, it makes a most ideal appliance.

When used on cases where the upper molar is slightly in lingual occlusion, a band can be placed on the upper molar with a tube on the buccal surface to engage the buccal surface of the lower molar and throw the upper molar buccally. In using this form of the inclined plane, it must be observed whether the patient is closing the teeth correctly or biting to one side to avoid the inclined plane. If biting to one side, the appliance must be readjusted to avoid the possibility of the patient forcing some of the other teeth out of the line of occlusion.

The principle of using the inclined plane as an extra cusp has been described by many writers in the past and since the advent of the "casting process" some new ideas have been advocated. In the "posterior relation" of the lower arch in young patients, a band can be made for the upper molar and a "cusp" of wax made to occlude distally to the lower molar. The band and wax can then be removed, invested and cast, thus making a very strong and accurately fitting inclined plane.

In using the inclined plane without the use of intermaxillary rubbers it must be remembered that the appliance is passive and force is only exerted upon the teeth during the process of mastication or when the patient forc-

ibly closes the teeth. Therefore the results which are to be accomplished by the use of the inclined plane depend upon the force of mastication. If the appliance is not properly made or becomes displaced, the efficiency of the device is destroyed.

In using the inclined plane, the case must be carefully studied, and it must be remembered that the force exerted by the appliance is passive and becomes active only when the teeth are forcibly closed. Taking all cases as we find them, it will be found that an active appliance is to be preferred to a passive one. Nevertheless, such cases as reported by Suggett can be treated very satisfactorily with this appliance, which in a great many instances will be found the most satisfactory plan of treatment. —*M. D.*

Malocclusion in Young Children.

SEVERAL years ago it was supposed that malocclusion was to be found only in the second set of teeth. This theory was soon proven to be erroneous, because certain etiological factors which produce malocclusion in the permanent teeth would also produce malocclusion in the deciduous teeth. This has been found true by a number of investigators, foremost among those in Europe being Chapman and Lockett of London, Chiavaro of Rome, and Coebergh of Utrecht, who made extensive studies of malocclusion in children. The researches and writings of Bogue, of New York, are well known, but it has been found that such authorities did not call as much attention to malocclusion in small children as they should have.

The work done by Johnson, of Louisville, in the examination of babies for the American Medical Association in "The Better Babies Contest," brings to our minds the fact that malocclusion appears much earlier than we supposed. In his researches along this line he has demonstrated the fact that there is very little to suggest that malocclusion of the deciduous teeth is transmitted or inherited. As Johnson has been able to show, even in young children the malocclusion exists as a result of environment, improper feeding, faulty nutrition, adenoids and enlarged tonsils, with the resulting mouth-breathing, and likewise malocclusion which is of congenital origin.

In our work among young children, we find a large number of conditions present, which, if found in older children, would be set down as abnormalities of the labii frenum. The attachment of the labii in young children probably has considerable to do with the conditions which we find later in life. The work of Hellman in examining the different conditions which arise in breast-fed or bottle-fed babies will also produce a large amount of valuable information bearing directly on malocclusion, as will also the work of Hecker in the examination of children with rickets and the study of the etiological factors. Rickets has probably been responsible for a large percentage of the malocclusions appearing in early life in childhood, and also some of the conditions which are found later in life. We have seen only such evidence as would indicate that malocclusion is the result of environment; it makes its appearance very early in life and so many different conditions enter into the situation that it is confusing unless we have a large amount of data at

hand. Every practicing orthodontist should feel it his duty to help in the collection of this data, which is bound to prove very valuable in the future development of our science. In the future we should all make a more careful investigation of the condition of the teeth in young children, not so much with the idea of correcting the malocclusion but with the object in view of the prevention of this distressing condition. —*M. D.*

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ORTHODONTIC NEWS AND NOTES

This Department is in charge of Dr. H. C. Pollock, 808-809 Metropolitan Building, St. Louis. To avoid delay, communications in regard to notes should be sent direct.

The Harrison Drug Act.—The Federal law regarding the registration of narcotic drugs is being modified from day to day. As passed by the Senate and Representatives it was reasonably intelligible but the Commissioner of Internal Revenue is making frequent changes in rules of procedure which are vexing to physicians, and of very questionable legality.

The law requires the physician to keep a record of narcotic drugs dispensed, "except such as may be dispensed or distributed to a patient upon whom such physician, dentist or veterinary surgeon shall personally attend." The history of the passage of this law shows plainly that it was the intention to exempt records of ordinary personal dispensing to patients; but the Bureau of Internal Revenue has ruled that when the patient consults the doctor in his office, the doctor does not "attend" the patient, that attendance means a call on the patient; therefore, narcotics dispensed to the patient in the doctor's office must be recorded. Moreover, if at his call upon the patient, he leaves an extra supply of the narcotic to be used in case of need, this must be recorded because it was not personally administered by the physician.

A late ruling is one permitting specialists (such as oculists and dentists), who have occasion to use the drug frequently in office practice, to make up a stock solution of the drug, with a record of when it was made and when it was used up, without making a record of its use on individual patients. There would seem to be no warrant in the law itself for a ruling which discriminates between a practitioner using a narcotic frequently and one whose use of such is infrequent. There is no doubt that some of these days a test case will be given to the courts to determine how far the Commissioner of Internal Revenue may go in modifying the law.

In some States, as for instance—New York, the matter is complicated by the existence on the statute book of State laws regulating the use of narcotic drugs. The Harrison Federal law does not abrogate these State laws, In New York State, the physician must comply with the provisions of the Boylan law as well as those of the Harrison act, and must make out the records required by each.

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Dr. A. M. Nodine, of New York, has accepted the editorship of the Dental Department recently established in the *Women's World*, a periodical which enjoys a circulation of over a million. This places Dr. Nodine in a position to spread the gospel of oral hygiene and the tremendous advance of the science of dentistry, over the entire world.

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Orthodontists.—In order that this department may be made as interesting as possible, the Journal will be glad to publish announcements and notes of interest related to orthodontia, dates and programs of meetings, announcements of locations, or removal of offices. Notes should be sent direct to Dr. H. C. Pollock, 808-9 Metropolitan Building, St. Louis, Mo.

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The Iowa State Dental Society, which held its annual meeting May 4, 5 and 6, conducted a post-graduate school and clinic in orthodontia in connection with post-graduate schools in other departments of dentistry.

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Dr. F. B. Noyes, of Chicago, presented a paper before the Illinois Dental Society, May 4, in Peoria, Ill. The subject of Dr. Noyes' paper was: "Orthodontia and Its Relation to Dentistry."

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Dr. W. T. Barrett, of Philadelphia, on April 10th read a very interesting and complete paper on the results of his work in emetine treatment of pyorrhea, before the St. Louis Dental Society. This paper included the most recent work which has been brought out in this treatment and aroused a very lengthy and vigorous discussion by Drs. Virgil Loeb, Edgar H. Keyes, D. L. Harris, George Dock, B. L. Pippin, E. R. Hart and Wm. Conrad.